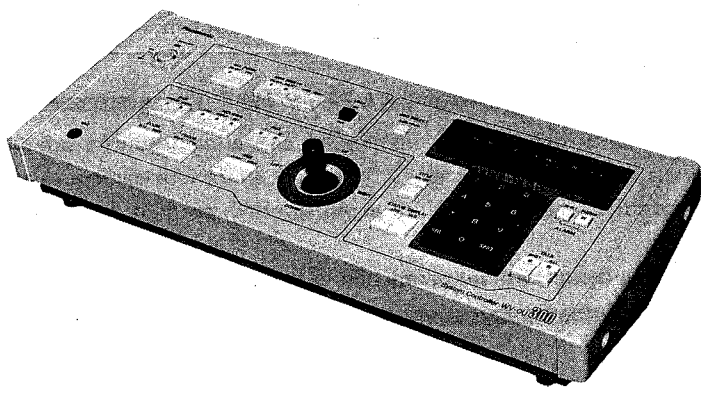
Service Manual

System Controller

WV-CU300

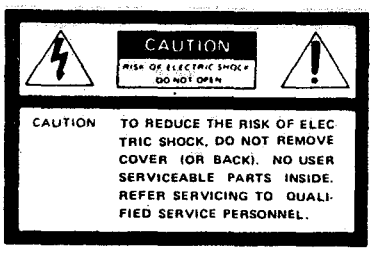


SPECIFICATIONS

Power supply:	WV-CU300/A, WV-CU300/B: 240V AC, 50 Hz WV-CU300/G: 230V AC, 50 Hz
Power consumption:	Approx. 11W
Input	
Video In (BNC):	1 Vp-p/75 ohms (FM audio mixed signal)
Mic In (Jack):	−64 dBV/600 ohms (unbalanced)
Output	
Video Out (BNC):	1 Vp-p/75 ohms (composite video signal)
Audio Out (Phono):	−10 dBV/10 kohms
Audio (FM) Out (BNC):	FM Signal
In/Out	
Data In/Out (BNC):	1 Vp-p/75 ohms (×2)
Switches	
Camera Functions:	Shutter: On/Off, Shutter Speed Select, Sens Up Select: Sens Up Mode Select Auto/Manual, Electronic Zoom: On/Off, Electronic Zoom Position: Area Select Lens Functions: Iris: Open/Close, Preset (Only with DC Control Lens), Focus: Far/Near, Zoom: Tele/Wide
Housing:	Wiper: On/Off, Defroster: On/Off, Camera: On/Off, Aux 1-2: On/Off
Pan/Tilt Functions:	Auto Pan: On/Off, Random Pan: On/Off, Manual Pan: Right/Left, Manual Tilt: Up/Down
Switching Functions:	Sequence Start: Normal/Program, Video Select: Spot/Sequence
Display Functions:	Status Display: On/Off
Audio:	Talk Spot: On/Off, Talk All: On/Off
Others:	Data Clock: SND/RCV, Unit No. (1-5), Seq. Unit No. (Station No. 1-3, Unit No. 1-8)
Ambient Operating Temperature:	−10°C - +50°C
Ambient Operating Humidity:	Less than 95%
Dimensions:	449 (W) × 180 (H) × 88 (D) mm)
Weight:	3.3 kg

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION TO REDUCE THE RISK OF ELEC TRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALI-FIED SERVICE PERSONNEL.

This symbol warns the user that uninsulated voltage within the unit may have suificient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included.
Therefore, it should be read carefully in order to avoid any problems.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are shaded on the schematic diagram and indicate " ⚠ " mark on the replacement parts list. It is essential that these critical parts should be repleced with manufacture's specified parts to prevent shock, fire, or other hazards.
Do not modify the original design without permission of manufacture.

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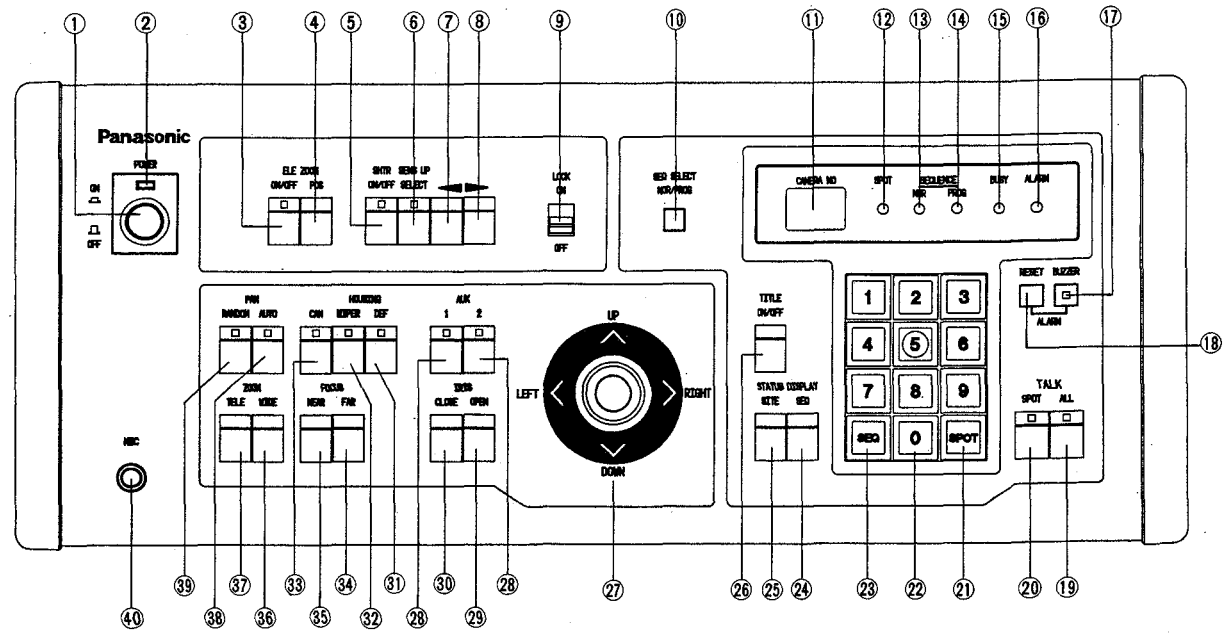
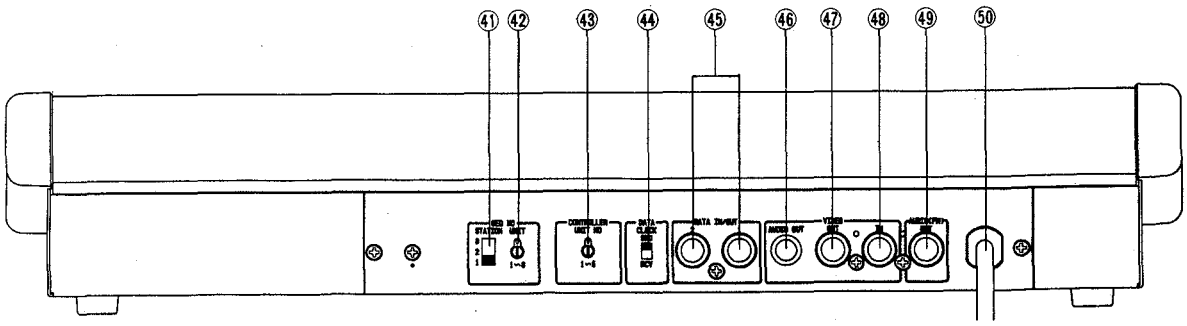
MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS





1. **Power ON/OFF Switch (POWER ON/OFF)**
   When this switch is pressed, the power of this unit is turned on and the Power Indicator (2)(POWER) lights up.

2. **Power Indicator (POWER)**

3. **Electronic Zoom ON/OFF Switch (ELE ZOOM, ON/OFF)**
   This is a push-push type switch with LED indicator and is used to activate or deactivate the electronic 2-times zoom function.
   When this switch is pressed prior to operation of the Zoom Position Selection Switch (4), the zooming position which is previously stored in the camera memory is zoomed in and the LED indicator of this switch lights up.
   When this switch is pressed again, the electronic zoom is disabled, the LED indicator of this switch goes off and the normal picture is obtained.
   The current zooming position is stored in the memory of the selected camera.
   To confirm the zooming position prior to the zoom in operation, press the Zoom Position Selection Switch (4). The selected position of the picture is emphasized in white on the video monitor connected to the Video Output Connector (47) and the LED indicator of this switch blinks.

4. **Zoom Position Selection Switch (ELE ZOOM, POS)**
   This is a push-push type switch and is used to select the zooming position of the picture.
   When this switch is pressed under the normal picture condition (Zoom off condition), the selected position to be zoomed in is emphasized in white and the LED indicator of the Electronic Zoom ON/OFF Switch (3) starts blinking.
   The selected position is switched over in the following order: Center ⟶ Left Top ⟶ Right Top ⟶ Left Bottom ⟶ Right Bottom ⟶ Center.
   When this switch is pressed under zoom on condition, the actual zooming position is switched over in the same order as above.
   Note:
   Zooming size can not be changed and is fixed to 2-times.

5. **Electronic Shutter ON/OFF Switch (SHTR, ON/OFF)**
   This is a push-push type switch with LED indicator and is used to activate or deactivate the electronic shutter function.
   When this switch is pressed, the selected camera is set to the electronic shutter mode with the shutter speed set by the camera (1/250, 1/500, 1/1,000) or by what was previously stored in the camera memory, and the LED indicator of this switch lights up.
   When the Site Status Display (25) is set to the OFF mode, the current shutter speed is displayed in the right bottom on the video monitor connected to the Video Output Connector (47) for about 5 seconds.
   To change the shutter speed, press the Decrement Switch (7) or Increment switch (8).
   When this switch is pressed again, the electronic shutter is disabled, the LED indicator of this switch goes off and normal picture is obtained.
   The current shutter speed is stored in the memory of the selected camera.
   Note:
   The electronic shutter can not be used together with the electronic sensitivity up function at the same time.

6. **Electronic Sensitivity Up Selection Switch (SENS UP SELECT)**
   This is a push-push type switch with LED indicator and is used to activate or deactivate the electronic sensitivity up function.
   By pressing this switch, the mode is switched over as follows: NORMAL (LED: OFF), AUTO (LED: ON), MANUAL (LED: blinks), NORMAL (LED: OFF).
   When this switch is pressed prior to operation of the Decrement Switch (7) or Increment Switch (8), the selected camera is set to the automatic electronic sensitivity up mode with the maximum sensitivity set by the camera (X 10) or by what was previously stored in the memory, and the LED indicator of this switch lights up. When the Site Status Display (25) is set to the OFF mode, the maximum multiple number of the electronic sensitivity up is displayed in the right bottom on the video monitor connected to the Video Output Connector (47) for about 5 seconds.
   To change the maximum multiple number of the automatic electronic sensitivity up mode, press the Decrement Switch (7) or Increment switch (8). When the Electronic Sensitivity Up Selection Switch (6) is pressed again (second time), the selected camera is set to the manual electronic sensitivity up mode with the lens iris fully opened together with the X1 of manual sensitivity up mode and the LED indicator of this switch blinks.
   When the Site Status Display (25) is set to the OFF mode, the current multiple number of the manual electronic sensitivity up mode is displayed in the right bottom on the video monitor connected to the Video Output Connector (47) for about 5 seconds.
   To change the multiple number of the manual electronic sensitivity up mode, press the Decrement Switch (7) or Increment switch (8).
   When the Electronic Sensitivity Up Selection Switch (6) is pressed again (third time), the electronic sensitivity up mode is disabled, the LED indicator of this switch goes off and the normal picture is obtained.
   The current multiple number is stored in the memory of the selected camera.
   Notes:
   1. The electronic sensitivity up function can not be used together with the electronic shutter function at the same time.
   2. The maximum multiple number is the fixed, upper limit for the range of possible multiple numbers. The actual multiple number depends on lighting conditions.

7. **Decrement Switch (◀)**
   This is a momentary type switch and is used to decrease the electronic shutter speed or multiple number of the electronic sensitivity up mode.

8. **Increment Switch (▶)**
   This is a momentary type switch and is used to increase the electronic shutter speed or multiple number of the electronic sensitivity up mode.

9. **Lock ON/OFF Switch (LOCK, ON/OFF)**
   This switch is used to lock in the current status of the electronic zoom, electronic shutter and electronic sensitivity up modes and to disable the operation of these switches on this control unit.
   Notes:
   1. Even if this switch is set to ON position, the switch operations of other System Controller WV-CU300 are operative.
   2. Control number from 3 to 9 (on pages 3 and 4) are effective for WV-BL600 and WV-CL700 series cameras.

10. Sequence Selection Switch (SEQ SELECT, NOR/PROG)

The sequence mode of the Sequential Switcher WJ-SQ508 can be remotely selected by this switch.

When the normal sequence mode (NOR) is selected, the Normal Sequence Indicator (13) lights up and normal sequence switching is performed at Sequential Switcher WJ-SQ508.

When the programmed sequence mode (PROG) is selected, the Programmed Sequence Indicator (14) lights up and programmed sequence switching is performed at Sequential Switcher WJ-SQ508.

Notes:

1. During the time that the Sequential Switcher WJ-SQ508 is having its sequence mode programmed, this function can not be operated.
2. Refer to the Operating Instructions of the Sequential Switcher WJ-SQ508 for details of this function.

11. Camera Number Display (CAMERA NO)

This is a seven segment, dual type LED and it displays information in the following ways:

1. Spot mode: It displays the camera number selected by the Ten Key (22).
2. Sequence mode: The camera number on this display changes according to the sequential mode of Sequential Switcher WJ-SQ508.
3. Spot alarm mode: The camera number of the spot alarmed camera blinks every 0.25 seconds.
4. Multiple alarm mode: The camera numbers of the sequence alarmed cameras are changed altemately.
5. Quick scan alarm mode: When the Sequential Switcher WJ-SQ508 is in this mode, the letters "AL" on the display blink every 0.25 seconds.

12. Spot Indicator (SPOT)

When a camera is selected by the Spot Key (21), this LED indicator lights up.

Note:

Also this indicator lights up when the Spot Switch on the Sequential Switcher WJ-SQ508 is selected.

13. Normal Sequence Indicator (SEQUENCE NOR)

When the normal sequence mode is selected by the Sequence Selection Switch (10), this LED indicator lights up.

Note:

Also this LED lights up when the Sequential Switcher WJ-SQ508 is in the normal sequence mode.

14. Programmed Sequence Indicator (SEQUENCE PROG)

When the programmed sequence mode (PROG) is selected by the Sequence Selection Switch (10), this LED indicator lights up.

Note:

Also this LED lights up when the Sequential Switcher WJ-SQ508 is in the program sequence mode.

15. Busy Indicator (BUSY)

This LED indicator lights up when one or more System Controllers other than this one are used to perform the function of the same camera.

While this indicator lighting, operations from this System Controller are deactivated and can not be performed until the indicator goes off.

16. Alarm Indicator (ALARM)

When the Sequential Switcher WJ-SQ508 is in the alarm mode, this indicator blinks. Also the Camera Number Display (11) blinks at the same time.

Note:

This LED becomes continuously on state when other System Controller WV-CU300 or Sequential Switcher WJ-SQ508 is in the alarm reset mode.

17. Alarm Buzzer Switch (ALARM BUZZER)

This is push-push type switch with LED indicator and is used to turn on/off the sound of the buzzer.

To know the alarm by the buzzer sound, keep the LED on. To stop the sound, press this switched.

18. Alarm Reset Switch (ALARM RESET)

When an alarm is received, the Alarm Indicator (16) blinks at both the System Controller WV-CU300 and Sequential Switcher WJ-SQ508.

To cancel the alarm at the System Controller WV-CU300, press this switch. When the alarm is canceled at the System Controller WV-CU300, the alarm Indicator other than this System Controller WV-CU300 changes from the blinking state to the continuously on state. When the alarm is canceled at the Sequential Switcher WJ-SQ508, the alarm indicator other than this Sequential Switcher WJ-SQ508 changes from a blinking state to the continuously on state.

Note:

By requiring alarm cancellation at both units, both the System Controller WV-CU300 operator and the Sequential Switcher WJ-SQ508 operator should aware of the alarm condition.

19. Talk All Switch (TALK ALL)

This is a momentary type switch with LED indicator and is used for transmitting caller's voice (using a microphone) to all camera-sites, where speakers are connected with the Receivers (WV-RC100 or WV-RC150).

It functions while LED is lighting.

Notes:

1. The optional Audio Board is necessary for this function. The System Controller WV-CU300 needs the Audio Board WV-PB11E and the Receiver needs the Audio Board WV-PB10E.
2. The LED on this switch blinks while another System Controller WV-CU300 is operating the All Talk Switch.
   Both TALK ALL and SPOT TALK functions will not be operated during this period.
3. When the LED on the Talk All Switch (19) is blinking, this function is not available because the same function is being used in another System Controller WV-CU300.

20. Spot Talk Switch (SPOT TALK)

This is a momentary type switch with LED indicator and is used for transmitting the caller's voice (using a microphone) to the desired camera-site, which is selected by the Ten Key (22), through the Receiver (WV-RC100 or WV-RC150).
It functions while LED is lighting.

Note:

The optional Audio Board is necessary for this function. The System Controller WV-CU300 needs the Audio Board WV-PB11E and the Receiver needs the Audio Board WV-PB10E.

21. Spot Key (SPOT)

When an individual camera-site is to be selected, this switch must be pressed after the camera number is selected by the Ten Key (22).

22. Ten Key (0 — 9)

This switch is used to select the camera-site and is always operated with the Spot Key (21).

23. Sequence Key (SEQ)

This switch is used when the sequential switching mode at the Sequential Switcher WJ-SQ508 is to be performed.

24. Sequence Title Display (STATUS DISPLAY, SEQ)

This switch is used to observe the titles of the cameras which are connected to the Sequential Switcher WJ-SQ508.
When this switch is pressed, the titles of eight cameras will be displayed on the video monitor.
When this switch is pressed again (second time), another titles of eight additional cameras, which are connected to the second Sequential Switcher WJ-SQ508, will be displayed while these Sequential Switchers WJ-SQ508 are operating under the master/slave configuration.
Further titles of additional cameras can be displayed as long as the Sequential Switcher WJ-SQ508 are operated in a master/slave configuration.

Notes:

1. The title can be displayed when the system is in the spot mode.
2. Refer to the Operation Display on page 21.
3. The title is generated by the Sequential Switcher WJ-SQ508.

25. Site Status Display (STATUS DISPLAY, SITE)

This switch is used to observe the status of the selected camera-site. When this switch is pressed after the desired camera-site has been selected by the Ten Key (22) and the Spot Key (21), the status of the camera-site is displayed on the video monitor.

Notes:

1. The status can be displayed after the Spot Key (21) has been selected.
2. The Control Mode Selection Switch (REMOTE/LOCAL) on the WV-BL600 or WV-CL700 series camera should be set to REMOTE position.
3. When cameras other than WV-BL600 or WV-CL700 series are connected, the status is displayed as "UNCONTROL".
4. Refer to the Operation Display on page 21.
5. The status is generated by the System Controller WV-CU300.

26. Title ON/OFF Selection Switch (TITLE ON/OFF)

When this switch is pressed once, the title of the camera will be displayed on the video monitor.
The title will be disappeared when this switch is pressed again.

Notes:

1. Refer to the Operation Display on page 21.
2. The title is generated by the Sequential Switcher WJ-SQ508.

27. Joystick Controller (UP/DOWN/RIGHT/LEFT)

This switch is a joystick type switch and the Pan/Tilt Head selected by pressing the Ten Key (22) and the Spot Key (21) can be operated manually for panning or tilting by moving this controller.

28. Auxiliary switches (AUX 1, 2)

These are push-push type switches and are used to control the user's auxiliary switches inside of the Receiver (WV-RC100 or WV-RC150).
When these switches (28) are pressed, the LED light up and the user's auxiliary switches inside of the Receiver are activated. For example, these user's auxiliary switches can be used for turning on and off a lighting kit, a buzzer and so on.

Note:

For details of the user's auxiliary switches, refer to the Operating Instructions of the Receiver.

29. Lens Iris Open Switch (IRIS, OPEN)

This switch is a momentary type switch and is used to open the lens iris of the specified lens such as WV-LA4.5, WV-LA6, WV-LA12, WV-LA18, WV-LA36, WV-LA6B2, WV-LA12B2, WV-LZ81/6A and WV-LZ81/10, mounted on the WV-BL600 or WV-CL700 series camera.
To set the lens iris to the factory preset condition, press both the Lens Iris Close Switch (30) and Lens Iris Open Switch (29) at the same time for about 2 seconds.

Notes:

1. This switch is inoperative when a lens other than a specified one is used or the Lens Selection switch (DC/VIDEO) on the camera is set to the VIDEO position.
2. When a camera other than WV-BL600 or WV-CL700 series camera is used, open/close/preset function of the lens are not operated.
3. When a lens of another brand is used with a Panasonic camera, even if it is a WV-BL600 or WV-CL 700 series camera, the presetting of the iris may not operate.

30. Lens Iris Close Switch (IRIS,CLOSE)

This switch is a momentary type switch and is used to close the lens iris of the specified lens such as WV-LA4.5, WV-LA6, WV-LA12, WV-LA18, WV-LA36, WV-LA6B2, WV-LA12B2 WV-LZ81/6A and WV-LZ81/10, mounted on the camera WV-BL600 or WV-CL700 series camera.
To set the lens iris to the factory preset condition, press both the Lens Iris Close Switch (30) and Lens Iris Open Switch (29) at the same time for about 2 seconds.

Notes:

1. This switch is inoperative when a lens other than a specified one is used or the Lens Selection Switch (DC/VIDEO) on the camera is set to the VIDEO position.
2. When a camera other than a WV-BL600 or WV-CL700 series camera is used, open/close/preset function of the lens are not operated.
3. When a lens of another brand is used with a Panasonic camera, even if it is a WV-BL600 or WV-CL 700 series camera, the presetting of the iris may not operate.

31. Defroster Switch (HOUSING, DEF)

This is a push-push type switch with LED indicator and is used to operate the defroster in the camera housing. When this switch is pressed, the LED lights up and the power switch for the defroster, which is located in the Receiver WV-RC150, is turned on. Press it again to turn off the power.

32. Wiper Switch (HOUSING, WIPER)

This is a push-push type switch with LED indicator and is used to operate the wiper unit WV-Z50.
When this switch is pressed, the LED lights up and the power switch for the wiper unit, which is located in the Receiver WV-RC150, is turned on.

CAUTION:

When another camera is selected by pressing the Ten Key (22), be sure to switch off the wiper to prevent premature wiper blade wear.

33. Camera Power Switch (HOUSING, CAM)

This is a push-push type switch with LED indicator and is used to turn the power on for a WV-BL604/WV-CL704 or other cameras operated by 24V AC power supply.
When this switch is pressed, the LED lights up and the power supply switch for the camera, which is located in the Receiver (WV-RC100 or WV-RC150), is turned on. Then power is supplied to the camera. Press it again to turn off the power.

34. Far Focus Switch (FOCUS, FAR)

This is a momentary type switch and when the selected camera - by pressing the Ten Key (22) - uses a motorized focus lens, the remote focus control (Far) can be performed through the Receiver (WV-RC100 or WV-RC150) by pressing this switch.
Recommended Lens: WV-LZ81/6A, WV-LZ81/10

35. Near Focus Switch (FOCUS, NEAR)

This is a momentary type switch and when the selected camera - by pressing the Ten Key (22) - uses a motorized focus lens, the remote focus control (Near) can be performed through the Receiver (WV-RC100 or WV-RC150) by pressing this switch.
Recommended Lens: WV-LZ81/6A, WV-LZ81/10

36. Wide Zoom Switch (ZOOM, WIDE)

This is a momentary type switch and when the selected camera - by pressing the Ten Key (22) - having a motorized zoom lens, the remote zoom operation (Wide)can be performed through the Receiver (WV-RC100 or WV-RC150) by pressing this switch.
Recommended Lens: WV - LZ81/6A, WV-LZ81/10

37. Tele Zoom Switch (ZOOM, TELE)

This is a momentary type switch and when the selected camera - by pressing the Ten Key (22) - having a motorized zoom lens, the remote zoom operation (Tele) can be performed through the Receiver (WV-RC100 or WV-RC150) by pressing this switch.
Recommended Lens: WV - LZ81/6A, WV-LZ81/10.

38. Auto panning Switch (PAN, AUTO)

This switch is a push-push type switch with LED indicator and is used to pan the Pan/Tilt Head in an automatic manner. When this switch is pressed, the LED lights up and the Pan/Tilt Head starts panning within the range of the pre-adjusted panning angle. (Refer to the specifications of the Pan/Tilt Head for setting up the panning angle.)
The auto panning mode functions when either the Pan/Tilt Head WV-7220DE or WV-7225E is used.
When the Joystick Controller (27) is operated or the Random Panning Switch (39) is pressed during the auto panning operation, auto panning will be canceled and operation of the Pan/Tilt Head will be controlled by that function (The LED goes off).

39. Random Panning Switch (PAN, RANDOM)

This switch is a push-push type switch with LED indicator and is used to pan the Pan/Tilt Head in an random manner.
When this switch is pressed, the LED lights up and the Pan/Tilt Head starts to move to right, left and stop at random. The movement of the random panning has been pre-programed by the Receiver (WV-RC100 or WV-RC150).
The random panning mode functions when either the Pan/Tilt Head WV-7220DE or WV-7225E is used.
When the Joystick Controller (27) is operated or the Auto Panning Switch (38) is pressed during the random panning operation, the random panning mode canceled and operation of the Pan/Tilt Head will be controlled by that function (The LED goes off).

40. Microphone Input Jack (MIC)

This microphone input is used for talking to the camera-site with Talk switch (19) or (20).
A microphone having 1/4" TS-plug should be used.

Note:

The optional Audio Board should be installed in both the System Controller WV-CU300 and the Receiver (WV-RC100 or WV-RC150).

41. Station Number Selection Switch (SEQ NO. STATION 1/2/3)

This switch is used to set up the Station Number of the System Controller WV-CU300. This number must be the same as the one with the Sequential Switcher WJ-SQ508 whose spot/sequence video signal is supplied to the Video Input Connector (48) of this System Controller WV-CU300.

Note:

The Station Numbers are available for up to 3 stations. See page 21 for additional information on setting up the Station Numbers.

42. Sequence Unit Number Selection Switch (SEQ NO. UNIT 1 - 8)

This switch is used to set up the Unit Number of the System Controller WV-CU300. This number must be the same as the one with the master unit of the Sequential Switcher WJ-SQ508 in the master/ slave operation and its spot/ sequence video signal is supplied to the Video Input Connector (48) of this System Controller WV-CU300.

Notes:

1. Up to 8 Sequential Switchers WJ-SQ508 can be connected to 1 System Controller WV-CU300.
2. The Number-0 and Number-9 on this switch are not used.

43. Controller Number Selection Switch (CONTROLLER UNIT. NO 1 - 5)

This switch is used to identify the unit number of the System Controller WV-CU300. Up to 5 System Controllers WV-CU300 can be installed in the system.

Notes:

1. The numbers other than 1 - 5 on this switch are not used.
2. See page 21 for additional information on setting up the unit number.

44. Data Clock Switch (DATA CLOCK, SND/RCV)

When the data clock is supplied to the Data Input /Output Connector (45) from another System Controller WV-CU300 or Multiplex Unit WJ-MP404, turn this switch to the RCV position. When this System Controller WV-CU300 is used as the sender of data clock to the system, turn this switch to the SND position.

Note:

Use Multiplex Unit WJ-MP404 as the sender of the data clock.

45. Data Input /Output Connector (Data In /Out 1/2)

These connectors both send and receive data clock to and from other System Controller WV-CU300's (or Multiplex Unit WJ-MP404's/ Sequential Switcher WJ-SQ508's) in the system. Also, the data clock signal is either sent or received from these connectors (depending on send or receive mode set up). See page 19 for additional information on connecting the data line between multiple units.

The data line connection is looped through all units with the first and last unit being automatically terminated with 75 ohms and all other units being high impedance looped through.

46. Audio Output Connector (AUDIO OUT)

The demodulated audio signal is available at this connector for use an optional audio amplifier and speaker. The audio signal from desired camera-site can be obtained at this connector by selecting the camera-site using the Sequence Key (23), the Spot key (21) and the Ten key (22).

Note:

The optional Audio Board WV-PB11E is required.

47. Video Output Connector (VIDEO, OUT)

The composite video signal with the character signal is provided at this connector.

48. Video Input Connector (VIDEO, IN)

The multiplexed video and control data signal from the Sequential Switcher WJ-SQ508 is supplied to this connector.

49. FM Audio Output Connector (AUDIO (FM), OUT)

Audio picked up by the optional microphone of the System Controller WV-CU300 is converted to a FM signal and is provided to this connector. This audio signal will be supplied to the Audio Mix & Selector WJ-DA464.

50. Power Cord

CIRCUIT DESCRIPTION

1. General

The WV-CU300 System Controller, when combined with the optional WJ-MP404 Multiplex Unit, enables remote control of the various functions of compatible cameras, such as the WV-BL600 and WV-CL700 Series Cameras.When used in a system with the WV-RC100 Indoor Receiver or the WV-RC150 Outdoor Receiver, the WV-CU300 can control camera functions and accessory equipment, including focus, zoom, pan/tilt, and more. In addition, the WV-CU300 can control sequential switching in systems of up to 64 cameras, using as many as 8 WJ-SQ508 Sequential Switchers (optional) in a master/slave configuration. The WV-CU300 features bidirectional audio capability with all-talk paging, using optional audio accessories. Provision for addition of an optional microphone is made in the front panel. Data transmission to the WJ-MP404 Multiplex Unit and the WJ-SQ508 Sequential Switchers is made via standard RG59U coaxial cable. There are many system combinations possible which are left to the customer's creativity.

2. Analogue Main Circuit Board

2-1. Audio (FM) Circuit

The audio (FM) multiplexed video signal at pin1 of CN4 is supplied to the buffer Q5. The FM carrier signal (11.2MHz) is produced through the band-pass-filters CF1, CF2 at the emitter of Q7. Then this carrier signal is fed to the Audio Board WV-PB11 (optional) through pin1 of CN8. The audio multiplexed video signal at the emitter of Q5 is supplied to the band-pass-filters CF5, CF3 to produce the FM mute signal. The FM mute signal (12.3MHz) from IC2 is fed to the Audio Board WV-PB11 (optional) through pin6 of CN8 and to the Digital Board through pin14 of CN3. These signals are used to mute the audio switching noise when the audio multiplexed video signal at Sequential Switchers WJ-SQ508 is switched. The FM carrier signal of 11.7MHz from the Audio Board WV-PB11 through pin1 of CN9 is supplied to the emitter of Q4. The amplified FM carrier at the collector of Q2 is provided at the BNC connector on the rear panel of WV-CU300 through pin5 of CN5.

2-2. Video Circuit

The audio mixed video signal from the BNC connector on the rear panel of WV-CU300 through pin1 of CN4 is supplied to the buffer Q68. The audio signal is cut out by the low-pass-filters CF4 and only the video signal is supplied to the base of Q11. The video signal at the emitter of Q12 is supplied to the character signal mix circuit Q17, Q18, Q20, Q21 where the character signal from the Digital Board through CN3 is mixed with the video signal.

The edge signal (black) of the character signal CHG (L) B from pin17 of CN3 is supplied to the base of Q18 through the inverter IC3. This signal is mixed with the video signal at Q17, Q18. The character signal of white portion CHG (H) W from pin16 of CN3 is supplied to the base of Q21 where this signal is mixed with the video signal. The character mixed video signal processed through Q22, Q23, Q65 is fed to the BNC connector on the rear panel of WV-CU300 through pin1 of CN5. The video signal at the emitter of Q11 is supplied to the sync separation circuit Q25. The H. sync is produced at pin8 of IC3 and this signal is supplied to the clamp circuit Q13, Q14. Also H. sync is supplied to the Digital Board through pin18 of CN3. The V. sync is produced at the Controller of Q30. The sync signal for the character signal is produced by Q28 and is supplied to the emitter of Q19 as a character sync signal. This signal is supplied to the Digital Board through pin20 of CN3.

2-3. Control Signal Circuit

The control signal from the DATA IN/OUT connector on the rear panel of WV-CU300 is supplied to the base of Q45 through pin7 of CN5. The amplified control signal at the collector of Q67 is supplied to the system sync detector circuit Q49, Q50 where the system sync signal is taken out from the control signal. This system sync signal is fed to the Digital Board through pin25 of CN3. The buffered control signal at the base of Q53 is supplied to the data detector circuit Q54, Q56, Q57 where the data is taken out from the control signal. The data signal at the emitter of Q58 is fed to the Digital Board through pin24 of CN3. The IF clamp signal from the Digital Board through pin21 of CN3 is supplied to the clamp circuit Q51 Q52. The clamped control signal at the base of Q66 and the part of sync portion on the data signal at the base of Q62 is compare d their level. And the compared sync is supplied to the Digital Board through pin10 of CN3 as a level detector signal. This signal is used, when the control signal in the CCTV system is broken or the termination of the control signal becomes off, to detect whether the control signal is supplied to each system component without error or not. The system data (SO DATA) and the TX SYNC are supplied from the Digital Board through pin22 and pin28 8of CN3 are fed to the base of Q34. At the same time,, TX CONT signal from pin23 of CN3 is supplied to the base of Q44. The transistors Q33 to Q44 construct the control signal drive circuit. The TX SYNC exists only when the DATA CLOCK switch on the rear panel of WV-CU300 is turned to SND position. Therefore, this drive circuit will work to send out the control signal to the other system components. The drived control signal is fed to the DATA IN/OUT connector on the rear panel of WV-CU300 through pin7 of CN5.

2-4. Power Supply Circuit

The AC main voltage is supplied to pin2, pin3 of CN31. IC4, IC5, Q31, Q32 construct the DC power generator. The 12VDC is generated at pin13 of IC4 and the 5VDC is generated at the emitter of Q31.

ADJUSTMENT PROCEDURE

1. Test Equipment Required

The following test equipment is required for adjusting System Controller WV-CU300.

- Oscilloscope (More than 20 MHz band width)
- Standard signal generetor (For 12.3 MHz, 75 ohms).
- Digital voltmeter.
- Video monitor

2. Disassembling Procedure for Adjustment

- Remove eight screws fixing Bottom cover and remove Bottom cover. (Fig. 2-1)

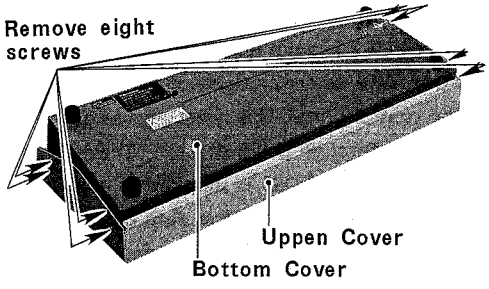


Fig. 2-1

- Remove four screws fixing Analog board and remove Analog board. (Fig. 2-2)

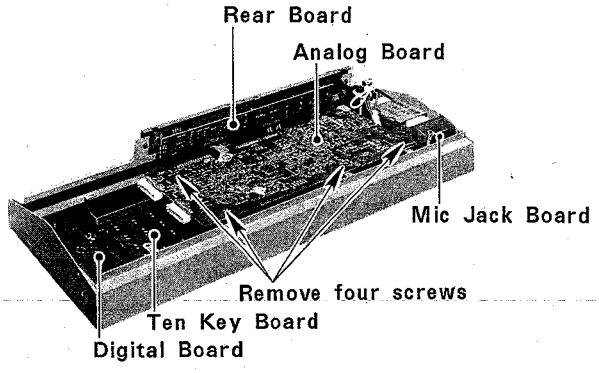


Fig. 2-2

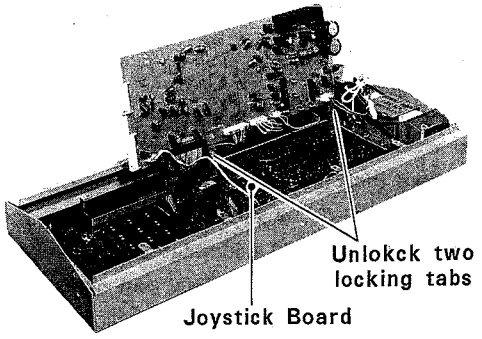


Fig. 2-3

- Remove two screws fixing Rear board and remove Rear board. (Fig. 2-4)

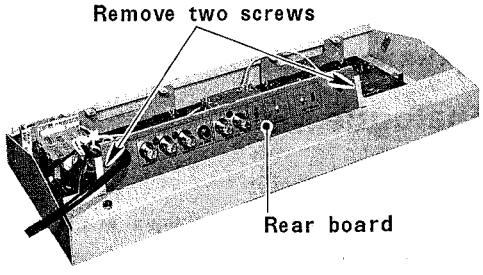


Fig. 2-4

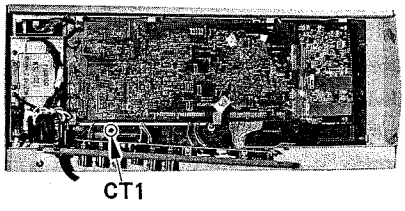


Fig. 2-5

3. Connection and Setting Up for Adjustment

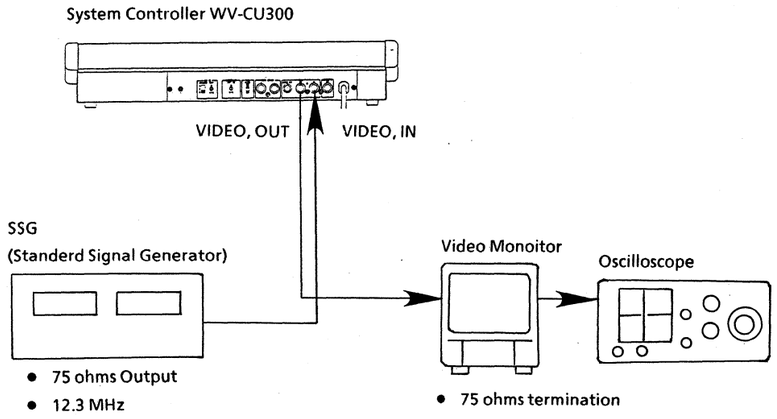


Fig. 3-1

Connection

- Connect Oscilloscope to VIDEO OUT Connector of WV-CU300 through Video monitor using coaxial cables.
- Terminate the video input monitor with 75 ohms.
- Connect SSG (Standerd Signal Generator) to VIDEO IN Connector of WV-CU300 using coaxial cable.

Setup

- Set respective switches on the System Controller WV-CU300 as follows.

LOCK ON/OFF Switch	OFF position
Data Clock Switch	RCV position
Controller Number	1 position
SEQ Unit Number Selection Switch	1 position
Station Number Selection switch	1 position
Alarm Buzzer Switch	OFF position

4. Adjustment Procedure

- Refer to page 14 for the position of test points and adjusting controls.

(1) + 5V Adjustment

Test Points : TP2 (+ 5V) Analog board
TP3 (GROUND) Analog board
Adjusts : VR1 (+ 5V ADJ) Analog board

- Connect minus (⊖) lead of digital voltmeter to TP3 (GROUND) on Analog board.
- Connect plus (⊕) lead of digital voltmeter to TP2 (+ 5V) on Analog board.
- Adjust VR1 (+ 5V ADJ) for + 5.00V ± 0.02V

(2) Charactor Position Adjustment

Adjust : CT1 (CHARACTER POSITION) Digital board
Observe : Oscilloscope
Video Monitor

- Connect Oscilloscope to VIDEO OUT Connector of WV-CU300 though Video monitor using coaxial cable.
- Terminate the Video input of Video monitor with 75 ohms.
- Disconnect SSG (Standerd Signal Generator) from VIDEO IN Connector of WV-CU300.
- Display test pattern on the Video monitor screen by the following procedure.

1) Turn off the power of WV-CU300 by pressing power ON/OFF Switch.
2) Turn on Power ON/OFF Switch while pressing three switches which are TALK ALL, SPOT TALK, and RANDOM PAN.
3) Confirm that the test pattern is appearred on the Video Monitor such as Fig. 4-1.

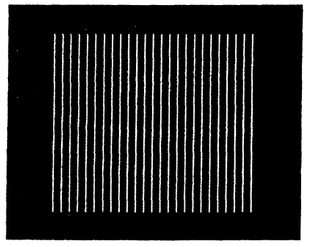


Fig. 4-1

NOTE) If threr is difference between test pattern on the video monitor and test pattern in Fig. 4-1, select the test pattern by pressing RANDOM PAN Switch until the test pattern such as Fig. 4-1 is appearred on the video monitor

- Adjust CT1 (CHARACTER POSITION) so that the time between right and of the test pattern line and sync signal edge becomes 11.0 ± 0.5 µsec. (Fig. 4-2)

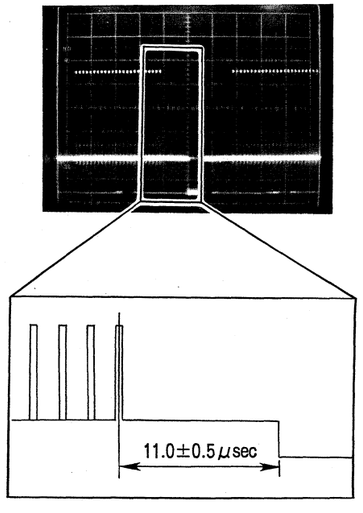


Fig. 4-2

(3) Detect DC Level Adjustment

Test Points : TP1 (DC DET) Analog board
TP3 (GROUND) Analog board
Adjusts : L11 (DC DET) Analog board

- Connect SSG (Standerd Signal Generator) to VIDEO IN Connector.
- Set SSG so that the output level becomes 130mVp-p. (≈ 15.5 dBm : 75 ohms)
- Set SSG so that the frequency deviation is 0 Hz. (Non modulation).
- Connect minus (⊖) lead of digital voltmeter to TP3 (GROUND) on Analog board.
- Connect plus (⊕) lead of digital voltmeter to TP1 (DC DET) on Analog board.
- Adjust L11 (DC DET) so that the DC voltage becomes 6.0V ± 0.1V.

D

A

1) Turn off the power of WV-CU300 by pressing power ON/OFF Switch.
2) Turn on Power ON/OFF Switch while pressing three switches which are TALK ALL, SPOT TALK, and RANDOM PAN.
3) Confirm that the test pattern is appeared on the Video Monitor such as Fig. 4-1.

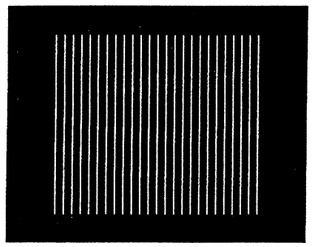


Fig. 4-1

NOTE) If threr is difference between test pattern on the video monitor and test pattern in Fig. 4-1, select the test pattern by pressing RANDOM PAN Switch until the test pattern such as Fig. 4-1 is appearred on the video monitor

- Adjust CT1 (CHARACTER POSITION) so that the time between right and of the test pattern line and sync signal edge becomes 11.0 ± 0.5 µsec. (Fig. 4-2)

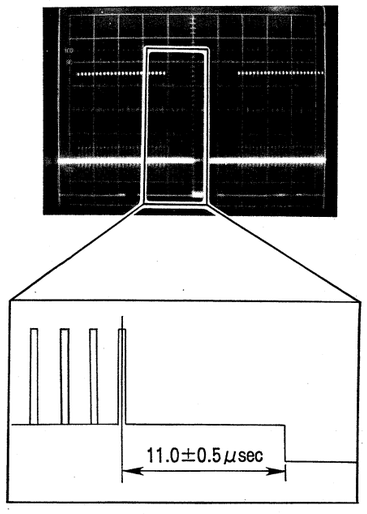


Fig. 4-2

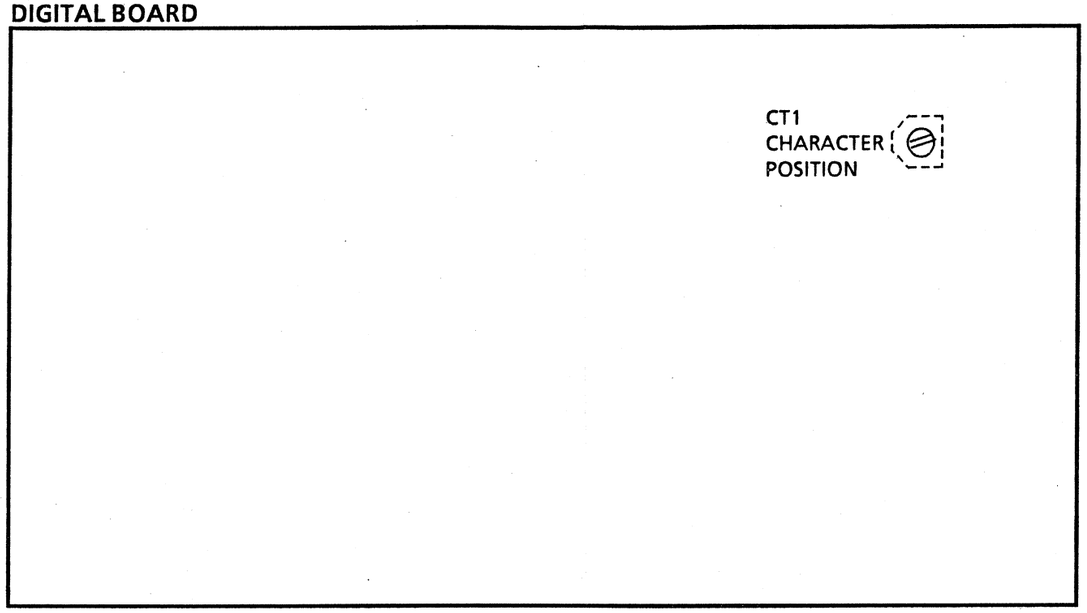
(3) Detect DC Level Adjustment

Test Points : TP1 (DC DET) Analog board
TP3 (GROUND) Analog board
Adjusts : L11 (DC DET) Analog board

- Connect SSG (Standerd Signal Generator) to VIDEO IN Connector.
- Set SSG so that the output level becomes 130mVp-p. (≃ 15.5 dBm : 75 ohms)
- Set SSG so that the frequency deviation is 0 Hz. (Non modulation).
- Connect minus (⊖) lead of digital voltmeter to TP3 (GROUND) on Analog board.
- Connect plus (⊕) lead of digital voltmeter to TP1 (DC DET) on Analog board.
- Adjust L11 (DC DET) so that the DC voltage becomes 6.0V ± 0.1V.

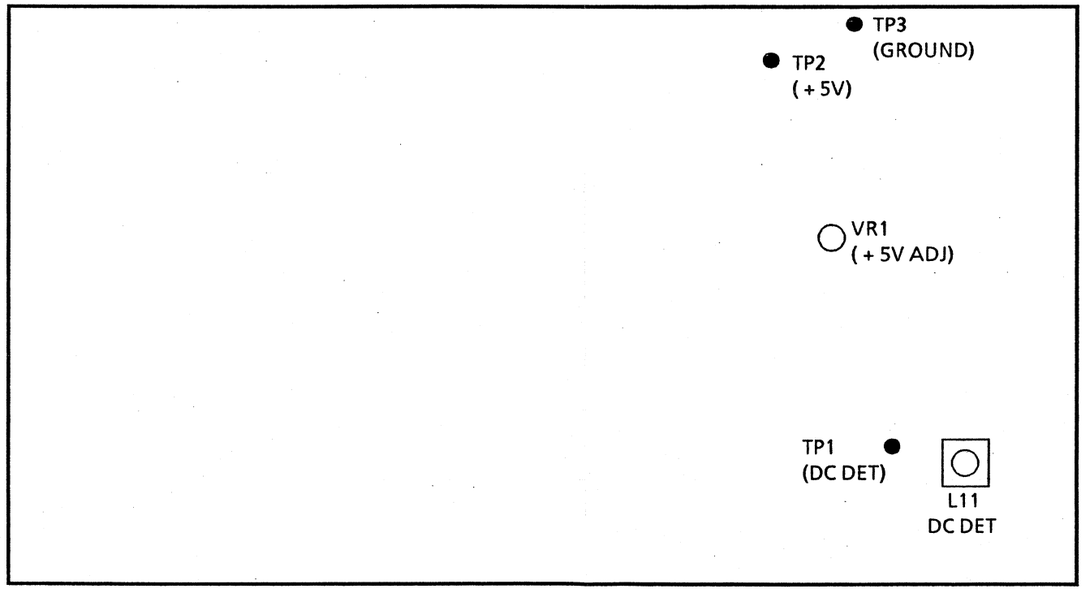
LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

DIGITAL BOARD



(PATTERN SIDE)

ANALOG BOARD



(COMPONENT SIDE)

CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical and two alphabet letters.

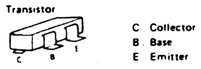
Transistor Number

Letter	Transistor No.	Letter	Transistor No.
A	2SB709	X	2SD602A
B	2SB709A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1Z	2SD1030
E	2SA1022	1N	2SK199
F	2SA1034	1O	2SK198
H	2SA1035	1A	2SB799
I	2SB792	1B	2SB814
K	2SC2778	1C	2SB902
P	2SD814	1F	2SK321
Q	2SD813	1L	2SK247
R	2SC2480	1K	2SK316
S	2SC2405	1M	2SJ84
T	2SC2406	1T	2SC3077
U	2SC2404	1X	2SC2845
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116

Example

WQ ⟶ 2SD602 – Q
YQ ⟶ 2SD601 – Q
1BS ⟶ 2SB814 ← S

Appearance and Symbols

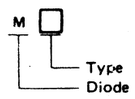


FET

	1	2	3
Except 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source

2. Chip Diode

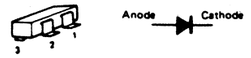
The diode number is indicated on the top surface of the chip diode using Two alphabet letters.



Diode Number

Letter	Diode No.	Letter	Diode No.
MA	MA151A	MI	MA152K
MB	MA152A	MK	MA28W-B
MC	MA153	ML	MA28T-A
MD	MA28-A	MN	MA151WA
ME	MA28-B	MO	MA152WA
MF	MA28W-A	MT	MA151WK
MH	MA151K	MU	MA152WK

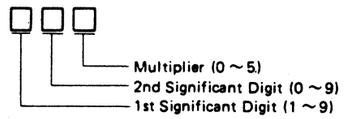
Appearance and Symbols



	1	2	3
MA28/28W/28T	–	Anode	Cathode
MA151K/152K	–	Anode	Cathode
MA151A/152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.



EXAMPLE:

330 ⟶ 33×10^0 = 33 ohms
561 ⟶ 56×10^1 = 560 ohms
123 ⟶ 12×10^3 = 12 kohms

Note: Zero ohm resistor (jumper chip) is colored red or green.

4. Chip Capacitor

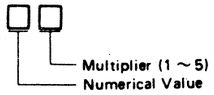
The capacitive value of replacement chip capacitors is indicated on the bottom surface. Original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

EXAMPLE:

0.5 ⟶	0.5 pF	2.5 ⟶	2.5 pF
75 ⟶	0.75 pF	33 ⟶	33 pF
1 ⟶	1 pF	82 ⟶	82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

* Letters I and O are not used

EXAMPLE:

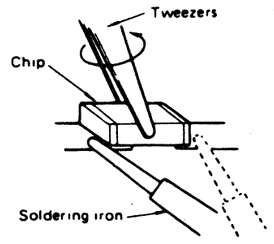
A1 ⟶ 10×10^1 = 100 pF
N2 ⟶ 33×10^2 = 3300 pF
S3 ⟶ 47×10^3 = 47000 pF

5. Precautions in replacing the chip component

1 Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal
4. Do not rub the electrode of chips
5. Do not subject the chips to excessive stress
6 It is recommended that a pencil-type soldering iron to be used
7. Solder with a diameter of less than 0.5 mm is recommended
8 Do not heat the chip beyond 3 seconds
9 Maintain temperature control under 260°C (500°F) when soldering

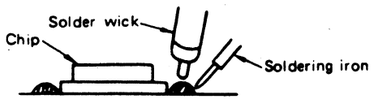
5-1 Removal (Transistor, Diode, Resistor and Capacitor)

1 Add the solder to both ends of the chip (three leads for chip transistor).
2 While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning it with tweezers
Note Be careful not to damage other chips

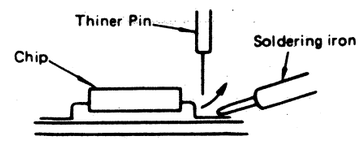


5-2 Removal (IC)

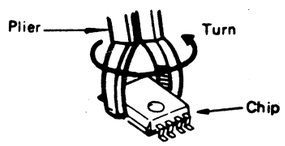
1. Add the solder wick and solder iron to each lead of the IC and remove solder.



2. Add the solder iron to each lead of the IC and lift each lead of the IC using thiner pin.

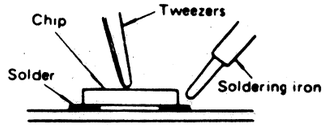


3. Remove IC turning it with plier.

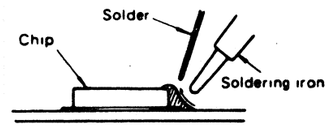


5-3 Mounting

1 Place the solder thinly on the chip mounting foil.
2 Solder the chip temporarily while holding the chip with the tweezers



3. Solder both ends of chip (three leads for chip transistor)



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

* Letters I and O are not used

EXAMPLE:

A1 ⟶ $10 \times 10^1 = 100$ pF

N2 ⟶ $33 \times 10^2 = 3300$ pF

S3 ⟶ $47 \times 10^3 = 47000$ pF

5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal
4. Do not rub the electrode of chips
5. Do not subject the chips to excessive stress
6. It is recommended that a pencil-type soldering iron to be used
7. Solder with a diameter of less than 0.5 mm is recommended
8. Do not heat the chip beyond 3 seconds
9. Maintain temperature control under 260°C (500°F) when soldering

5-1 Removal (Transistor, Diode, Resistor and Capacitor)

1. Add the solder to both ends of the chip (three leads for chip transistor).
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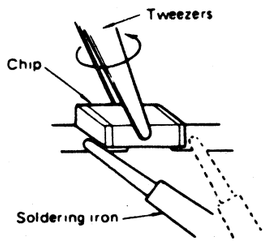
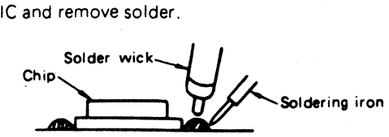
Note Be careful not to damage other chips

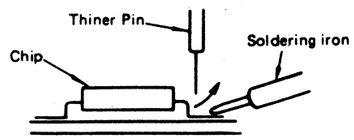


5-2 Removal (IC)

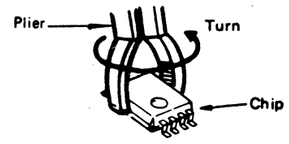
1. Add the solder wick and solder iron to each lead of the IC and remove solder.



2. Add the solder iron to each lead of the IC and lift each lead of the IC using thiner pin.

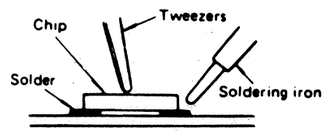


3. Remove IC turning it with plier.

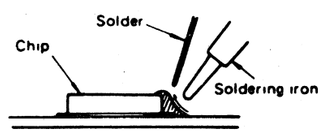


5-3 Mounting

1. Place the solder thinly on the chip mounting foil.
2. Solder the chip temporarily while holding the chip with the tweezers

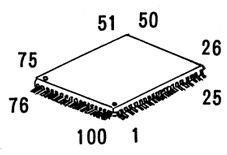


3. Solder both ends of chip (three leads for chip transistor)

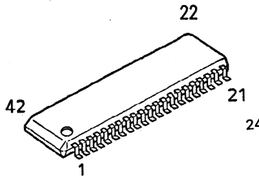


APPEARANCE OF IC, TRANSISTOR AND DIODE

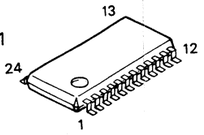
MN53080LBE1



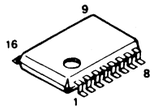
YWM66220FP



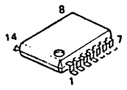
YWM6631FP



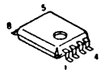
MN4538BS
MN74HC138S



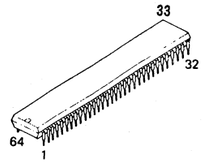
MN74HCU04S
MN74HC08S
MN74HC02S
MN74HC32S



NJM4558M
YWNJM2352M
YWBR93CS46F



YW75P116C021



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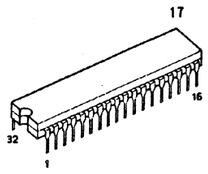
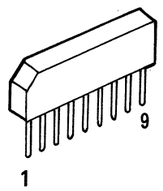
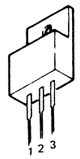


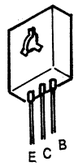
YWTA7303P



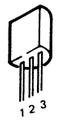
AN78M12



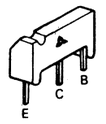
2SA886-QR



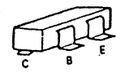
M51951ASL
YWM51951BSL



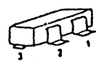
2SA1254-BC
2SC2377-CD
2SD636-QRS
2SC2206-BC



2SA1022-BC
2SB709-QRS
2SC2404-CD
2SD601-RS



2SK620



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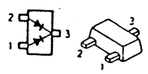
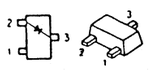
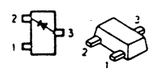


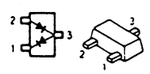
MA151K



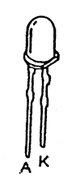
MA151A



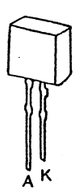
MA153



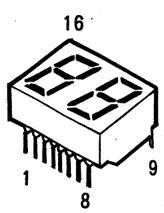
YWSLH38DC
LN28RP
LN29RP
LN39GP
SLH38MC



LN242RP



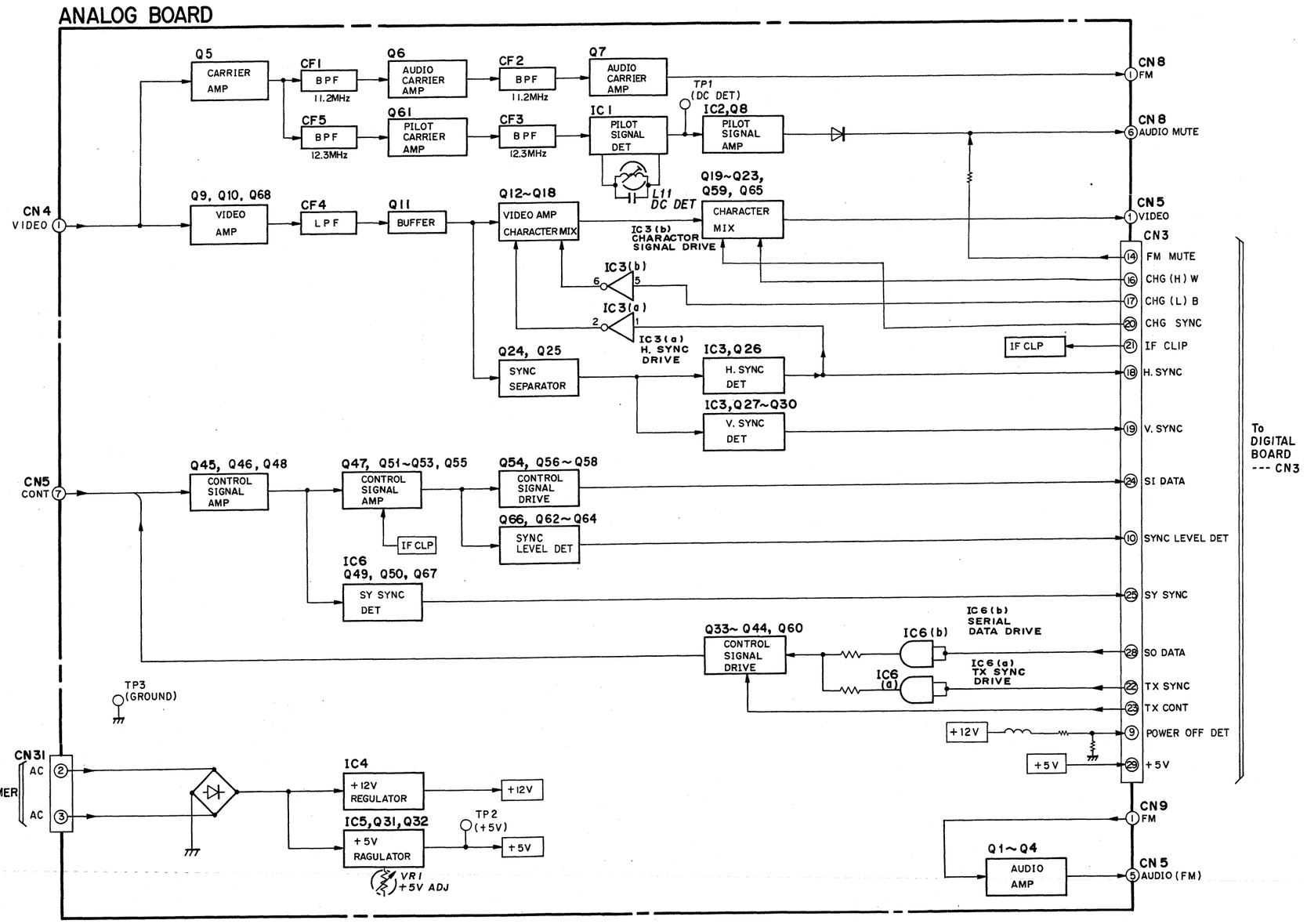
LN524RAS



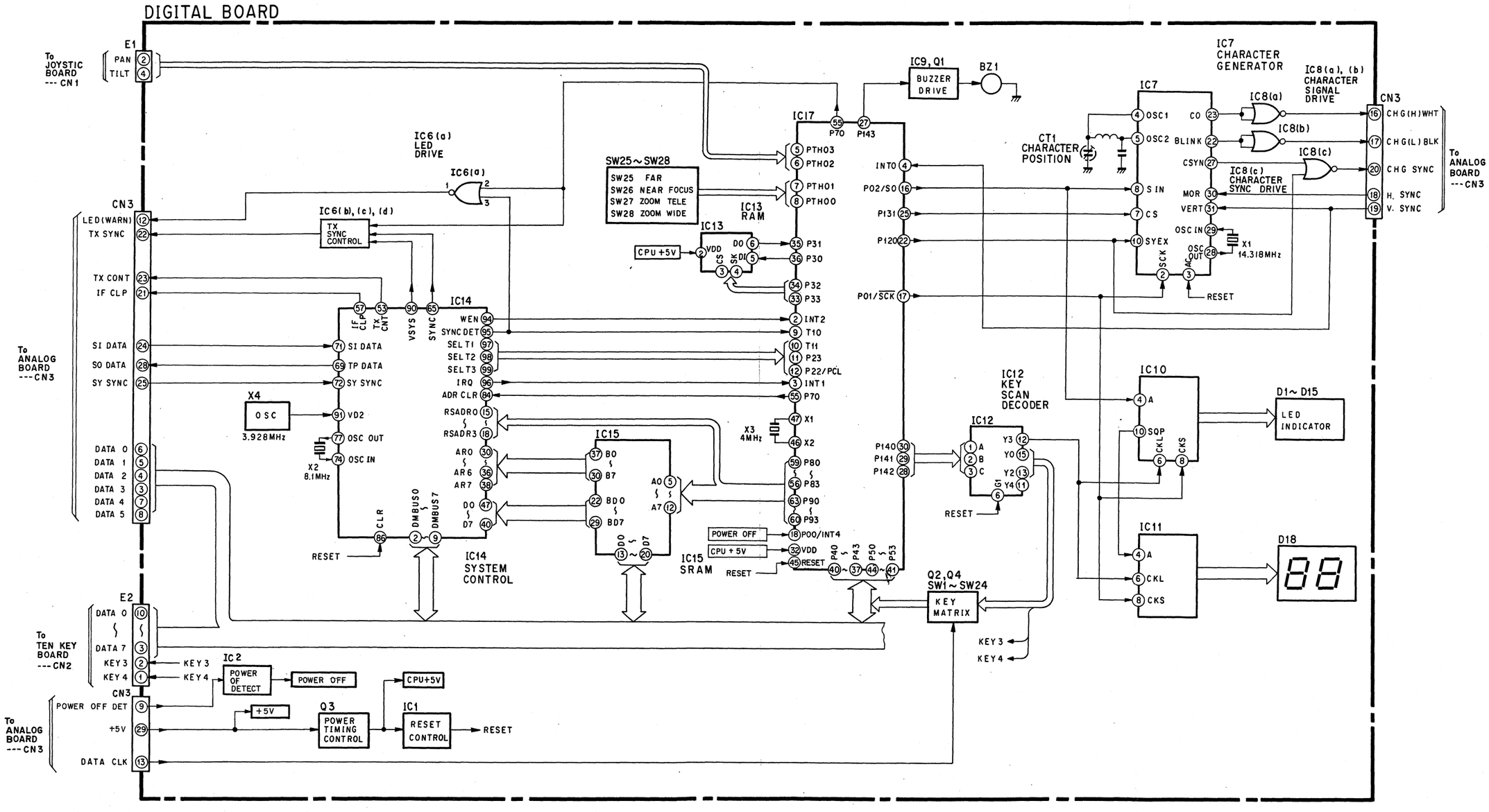
LN524RAS

Pin No.	Assignment	Pin No.	Assignment
1	Cathode c1	9	Cathode g2
2	Cathode e1	10	Cathode a2
3	Cathode d1	11	Cathode f2
4	Common Anode(D1)	12	Cathode b2
5	Common Anode(D1)	13	Cathode b1
6	Cathode d2	14	Cathode f1
7	Cathode e2	15	Cathode a1
8	Cathodec 2	16	Cathode g1

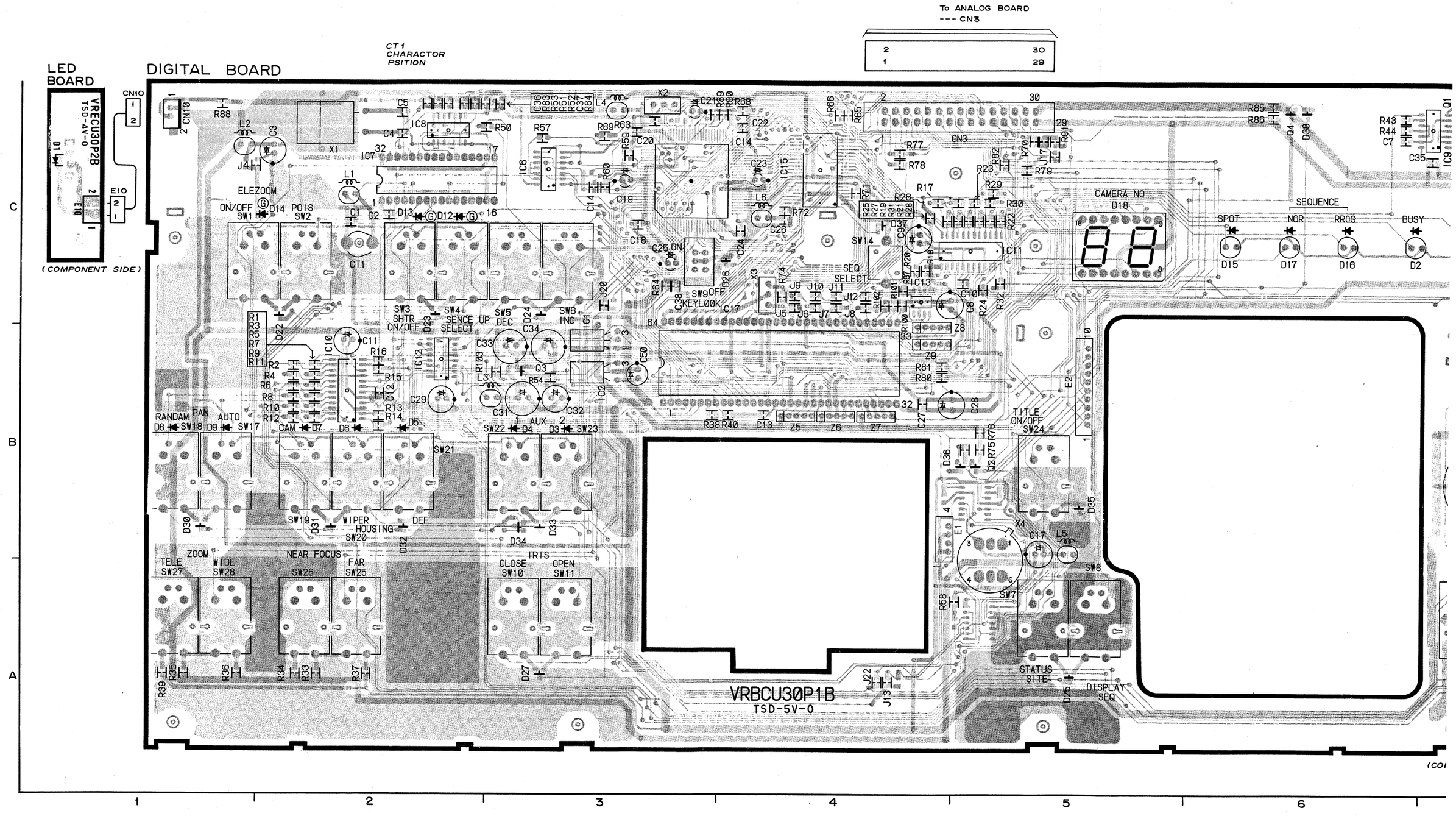
BLOCK DIAGRAM OF ANALOG BOARD



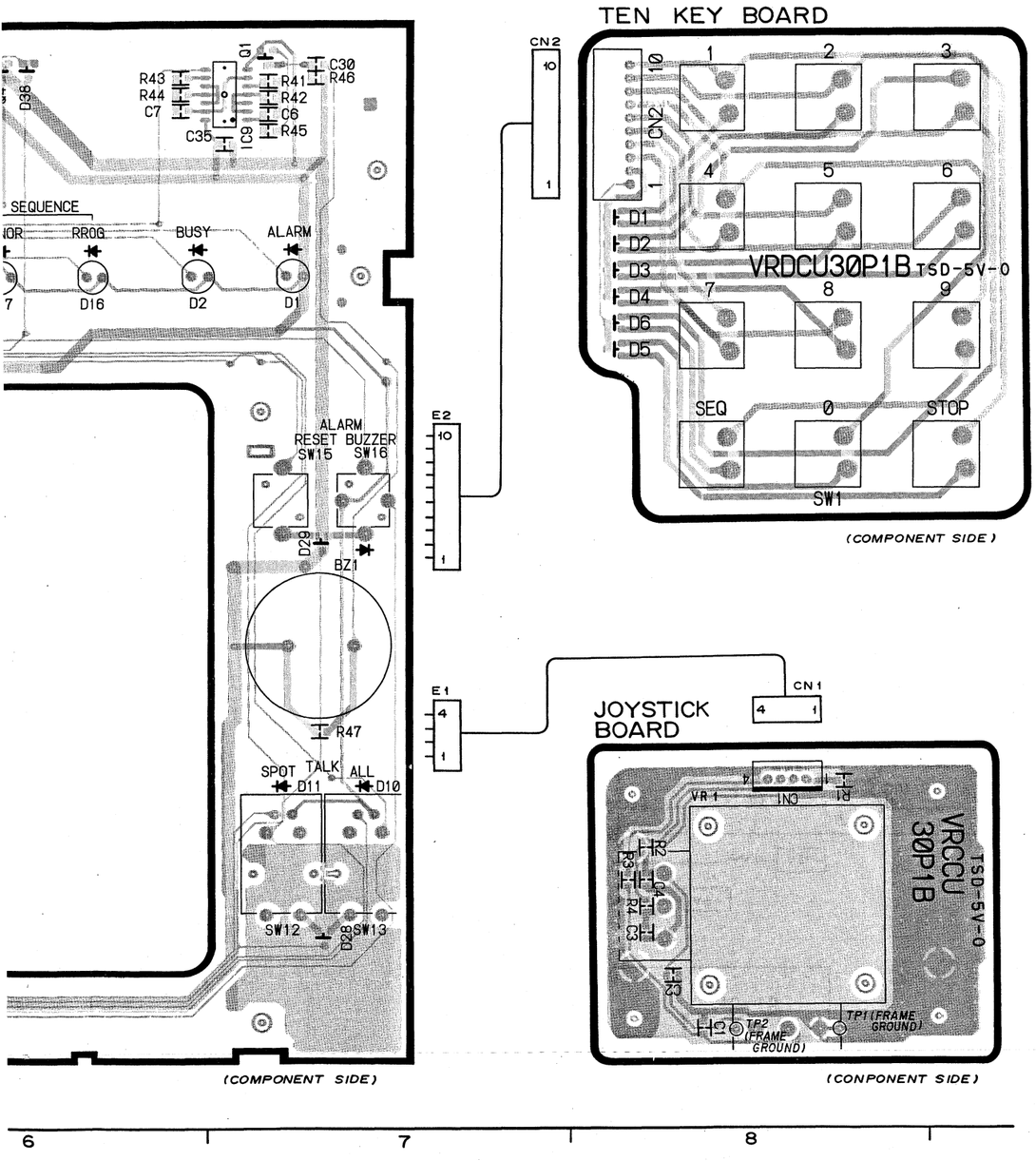
BLOCK DIAGRAM OF DIGITAL BOARD



CONDUCTOR VIEW OF DIGITAL BOARD, LED BOARD, TEN KEY



BOARD, TEN KEY BOARD AND JOYSTIC BOARD



<Index>

DIGITAL BOARD

IC1	B3
IC2	B3
IC6	C3
IC7	C2
IC8	C2
IC9	C7
IC10	B2
IC11	C5
IC12	B2
IC13	C4
IC14	C3
IC15	C4
IC17	B4
Q1	C7
Q2	B5
Q3	B3
Q4	C6
D1	C7
D2	C6
D3	B3
D4	B3
D5	B2
D6	B2
D7	B2
D8	B1
D9	B1
D10	A7
D11	A7
D12	C2
D13	C2
D14	C2
D15	C6
D16	C6
D17	C6
D18	C5
D22	C2
D23	C2
D24	C3
D25	A5
D26	C4
D27	A3
D28	A7
D29	B7
D30	B1
D31	B2
D32	B2
D33	B3
D34	B3
D35	B5
D36	B5
D37	C4
D38	C6

TEN-KEY BOARD

D1	C8
D2	C8
D3	C8
D4	C8
D5	C8
D6	C8

LED BOARD
<COMPONENT SIDE>

D1	C1

DIGITAL BOARD

<VOLTAGES>

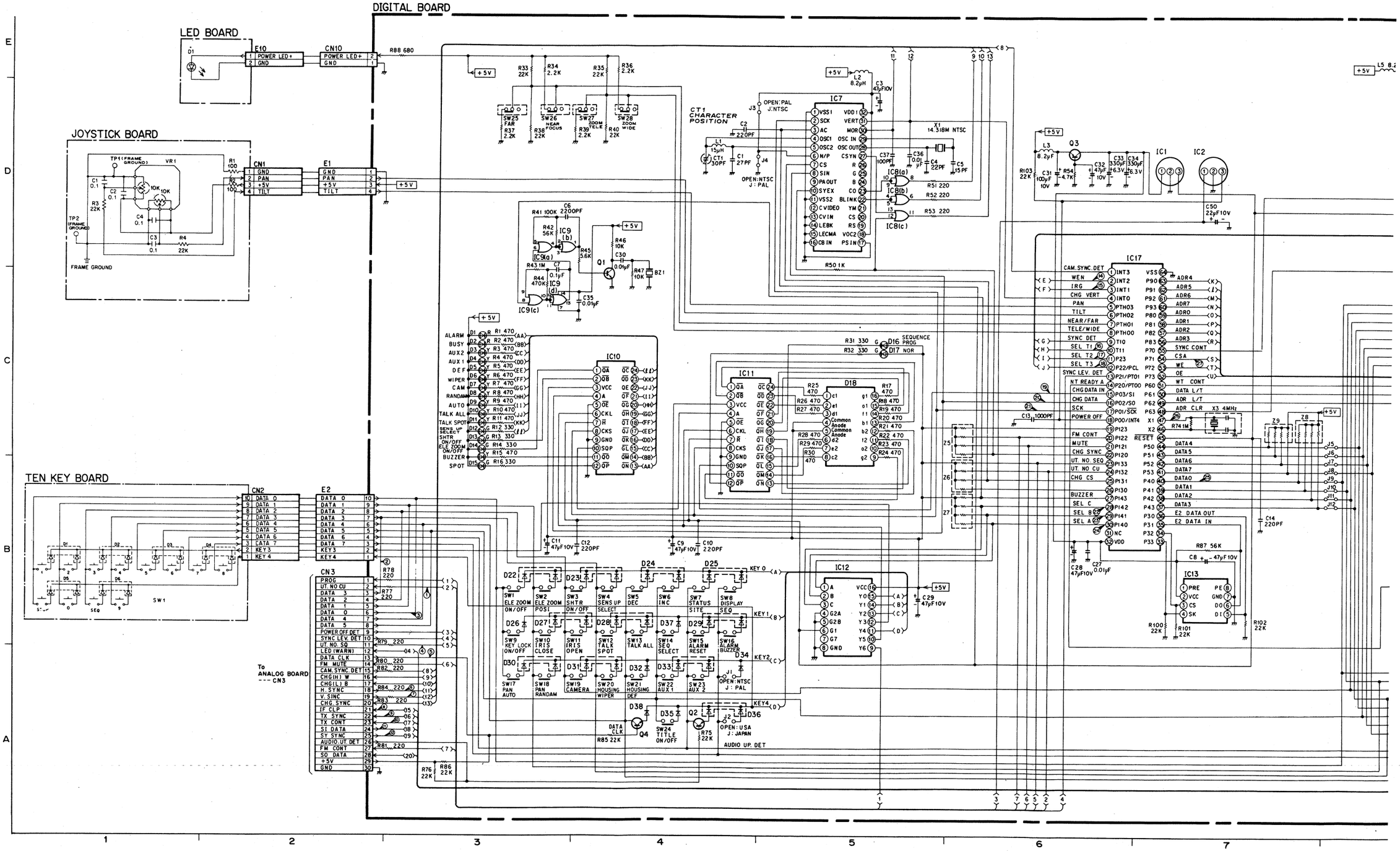
	B	C	E
Q1	0.7	0	0
2	-	-	-
3	4.3	5.0	5.0
4	4.7	4.6	4.3

	IC1	IC2	IC6	IC8	IC9	IC12	IC13
Pin 1	5.0	4.9	0	0	5.0	4.9	0
2	0	0	5.0	0	0	4.7	5.0
3	4.9	5.0	5.0	0	0	4.9	0
4			0	0.1	0	0	0
5			5.0	0.1	0	0	0
6			0	0.1	5.0	4.9	4.9
7			0	0	0	0.4	0
8			4.7	0	5.0	0	4.8
9			0	0	0	5.0	
10			0.3	0	0	4.8	
11			0.3	4.5	0	5.0	
12			0.3	0	0	5.0	
13			4.7	4.5	5.0	5.0	
14			5.0	5.0	5.0	5.0	
15						5.0	
16						5.0	

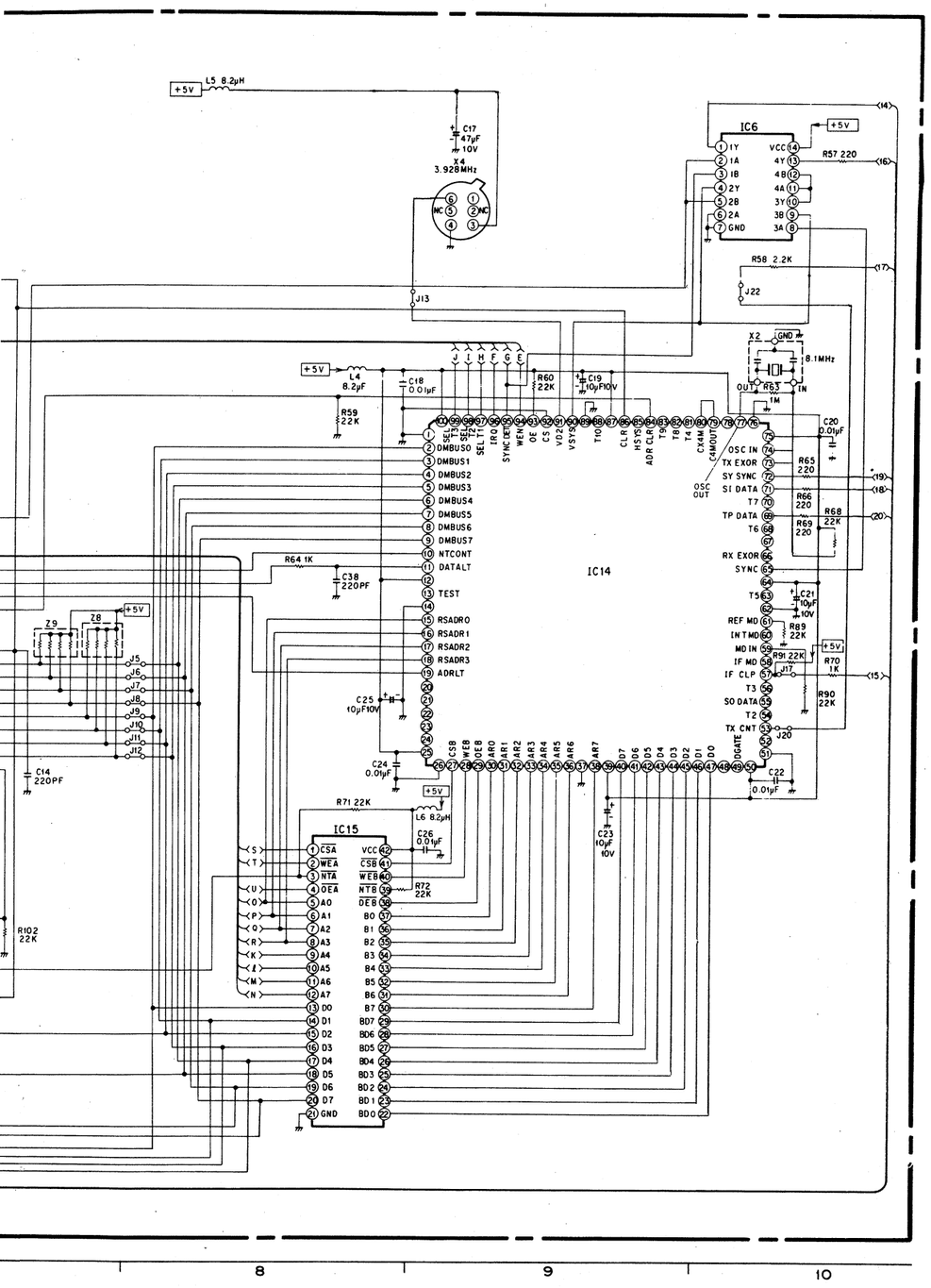
	IC7	IC10	IC11	IC15
Pin 1	0	3.5	3.5	-
2	4.9	3.5	3.5	5.0
3	4.9	5.0	5.0	0
4	2.3	0	-	4.4
5	2.3	0	0	-
6	5.0	4.8	4.8	-
7	4.5	4.9	4.9	-
8	0.1	4.9	4.9	-
9	-	0	0	-
10	0.1	-	0	-
11	0	3.6	3.5	-
12	0	3.5	3.5	-
13	0	3.5	3.5	-
14	0	3.5	3.5	-
15	0	3.6	3.5	-
16	0	3.6	3.5	-
17	0	3.7	3.5	-
18	5.0	3.7	3.5	-
19	2.2	3.7	3.5	-
20	1.5	3.7	3.5	-
21	0	3.7	3.5	0
22	0.1	3.6	3.5	0.3
23	0	3.6	3.5	0.3
24	0	3.5	3.5	0.3
25	0			0.3
26	0			0.3
27	4.5			0.3
28	2.3			0.3
29	2.1			0.3
30	0			2.3
31	5.0			2.3
32	5.0			2.3
33				2.3
34				2.4
35				0
36				2.6
37				2.5
38				4.9
39				5.0
40				5.0
41				4.9
42				5.0

	IC17	IC14		IC17	IC14
Pin 1	0.3	0	Pin51	4.9	0
2	0.3	-	52	4.9	2.5
3	4.9	-	53	5.0	3.9
4	5.0	-	54	-	5.0
5	2.8	-	55	5.0	0.7
6	2.6	-	56	-	1.3
7	2.5	-	57	-	0.2
8	2.5	-	58	-	1.6
9	5.0	-	59	-	0
10	1.5	4.9	60	-	0.3
11	1.5	4.9	61	-	0
12	4.2	5.0	62	-	0
13	5.0	0	63	-	5.0
14	5.0	0	64	0	5.0
15	-	-	65		4.7
16	0.1	-	66		5.0
17	4.9	-	67		0
18	5.0	-	68		0
19	0.1	4.9	69		0
20	5.0	0	70		0
21	5.0	0	71		1.2
22	0	0	72		3.3
23	2.0	0	73		4.7
24	5.0	0	74		2.4
25	4.5	5.0	75		5.0
26	0	0	76		0
27	5.0	5.0	77		2.4
28	4.9	4.9	78		2.5
29	4.7	2.5	79		2.5
30	4.9	-	80		2.5
31	4.3	-	81		5.0
32	5.0	-	82		5.0
33	0	-	83		5.0
34	0	-	84		5.0
35	4.9	-	85		5.0
36	0	-	86		4.9
37	-	0	87		5.0
38	-	-	88		5.0
39	-	5.0	89		0
40	-	-	90		0
41	-	-	91		2.5
42	-	-	92		0
43	-	-	93		5.0
44	-	-	94		0
45	4.9	-	95		0
46	2.6	-	96		4.9
47	2.5	-	97		1.5
48	5.0	-	98		1.6
49	5.0	3.9	99		4.2
50	4.9	5.0	100		5.0

SCHEMATIC DIAGRAM OF DIGITAL BOARD, LED BOARD,



), LED BOARD, TEN KEY BOARD AND JOYSTIC BOARD



<Index>

DIGITAL BOARD

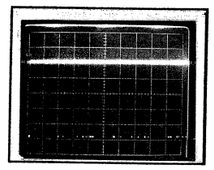
IC1	D7
IC2	D7
IC6	D10
IC7	D5
IC8	D5
IC9	C3,D3
IC10	C4
IC11	C4
IC12	B5
IC13	B7
IC14	C9
IC15	B8
IC17	C6
Q1	C4
Q2	A4
Q3	D6
Q4	A4
D1	C3
D2	C3
D3	C3
D4	C3
D5	C3
D6	C3
D7	C3
D8	C3
D9	C3
D10	C3
D11	C3
D12	C3
D13	C3
D14	C3
D15	B3
D16	C5
D17	C5
D18	C5
D22	B3
D23	B4
D24	B4
D25	B4
D26	B3
D27	B3
D28	B4
D29	B4
D30	A3
D31	A4
D32	A4
D33	A4
D34	A4
D35	A4
D36	A4
D37	B4
D38	A4

TEN-KEY BOARD

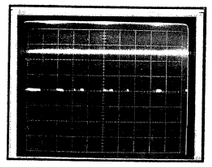
D1	B1
D2	B1
D3	B1
D4	B2
D5	B1
D6	B1

(WAVE FORMS)

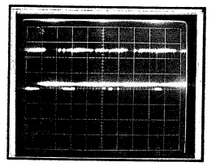
1. 1V/DIV, 0.5msec/DIV



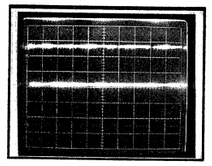
2. 2V/DIV, 2msec/DIV



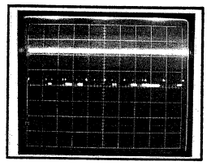
3. 2V/DIV, 2msec/DIV



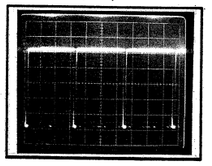
4. 2V/DIV, 2msec/DIV



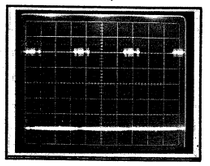
5. 1V/DIV, 2msec/DIV



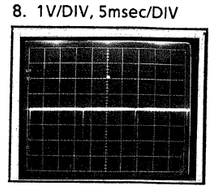
6. 1V/DIV, 20μsec/DIV



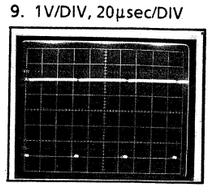
7. 1V/DIV, 20μsec/DIV



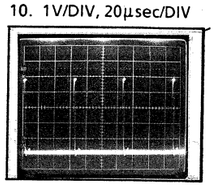
8. 1V/DIV, 5msec/DIV



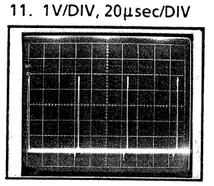
9. 1V/DIV, 20μsec/DIV



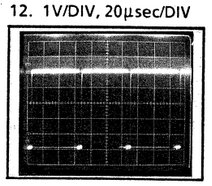
10. 1V/DIV, 20μsec/DIV



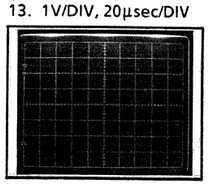
11. 1V/DIV, 20μsec/DIV



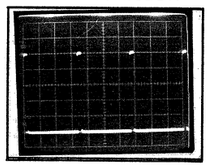
12. 1V/DIV, 20μsec/DIV



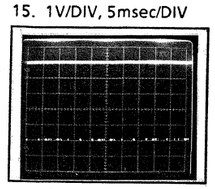
13. 1V/DIV, 20μsec/DIV



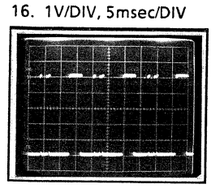
14. 1V/DIV, 5msec/DIV



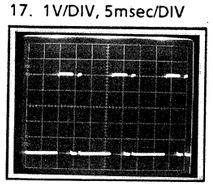
15. 1V/DIV, 5msec/DIV



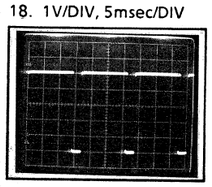
16. 1V/DIV, 5msec/DIV



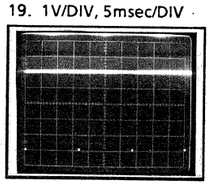
17. 1V/DIV, 5msec/DIV



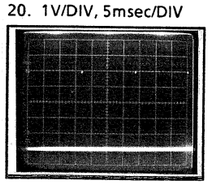
18. 1V/DIV, 5msec/DIV



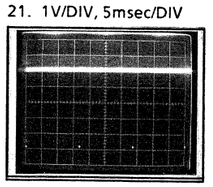
19. 1V/DIV, 5msec/DIV



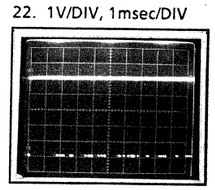
20. 1V/DIV, 5msec/DIV



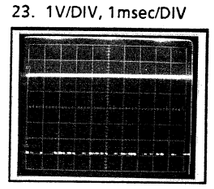
21. 1V/DIV, 5msec/DIV



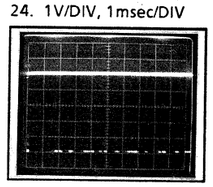
22. 1V/DIV, 1msec/DIV



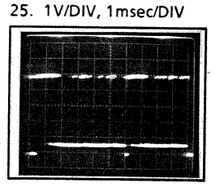
23. 1V/DIV, 1msec/DIV



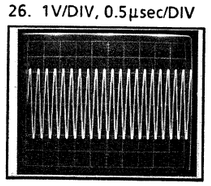
24. 1V/DIV, 1msec/DIV



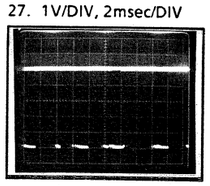
25. 1V/DIV, 1msec/DIV



26. 1V/DIV, 0.5μsec/DIV

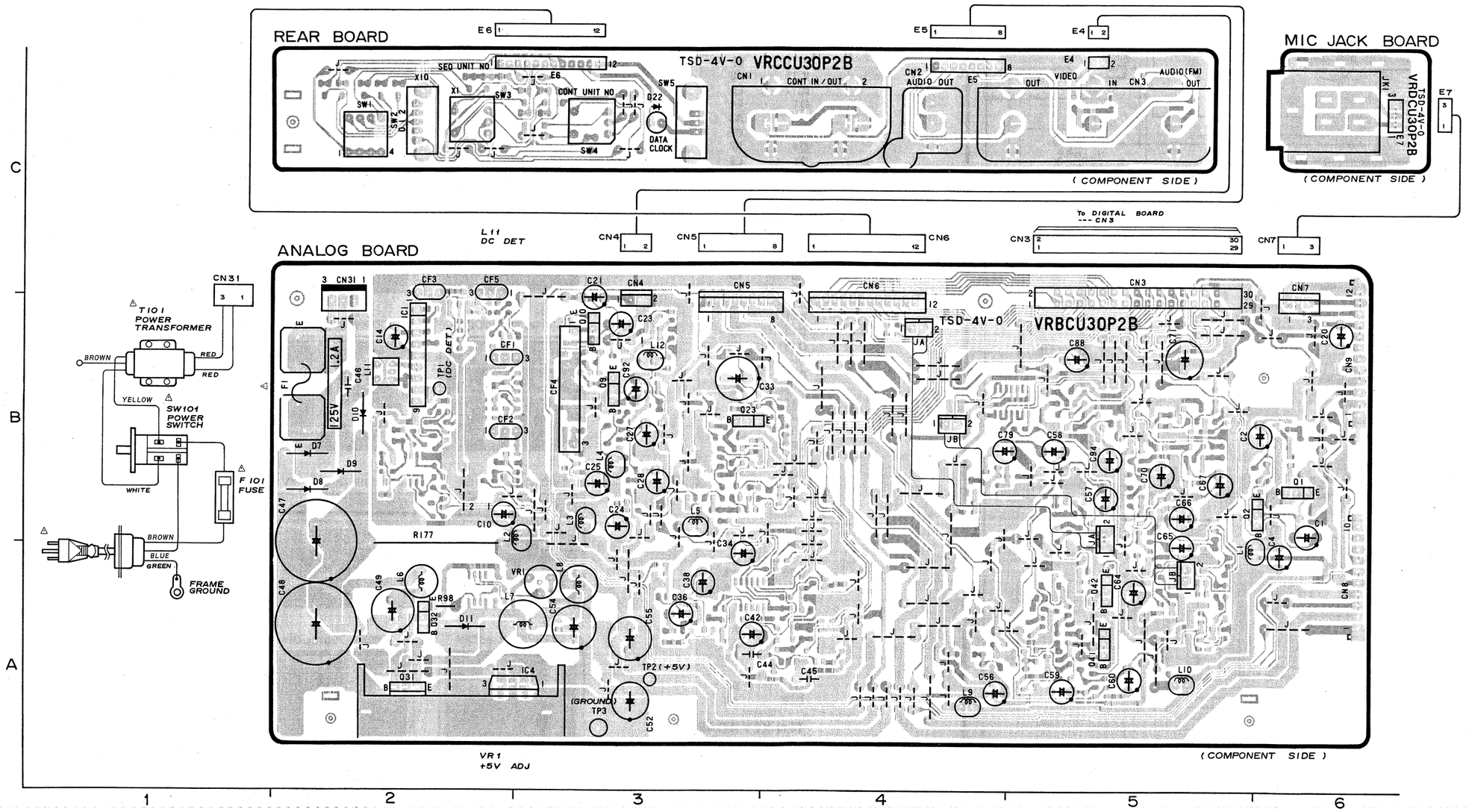


27. 1V/DIV, 2msec/DIV



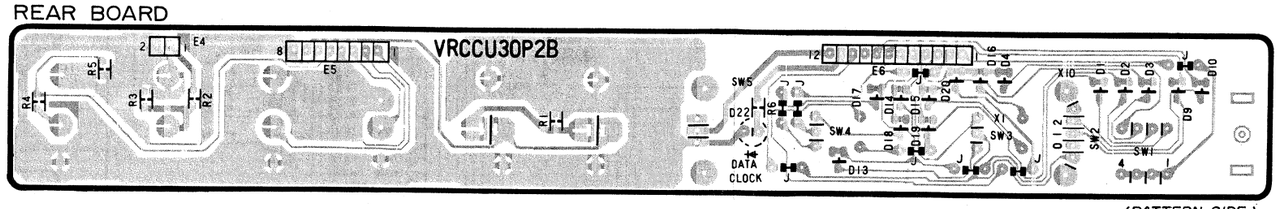
ANALOG BOARD
<COMPONENT SIDE>

IC1	B2
IC4	A2
Q1	B6
Q2	B6
Q9	B3
Q10	B3
Q23	B3
Q31	A2
Q32	A2
Q41	A5
Q42	A5
D7	B2
D8	B2
D9	B2
D10	B2
D11	A2
D22	C3



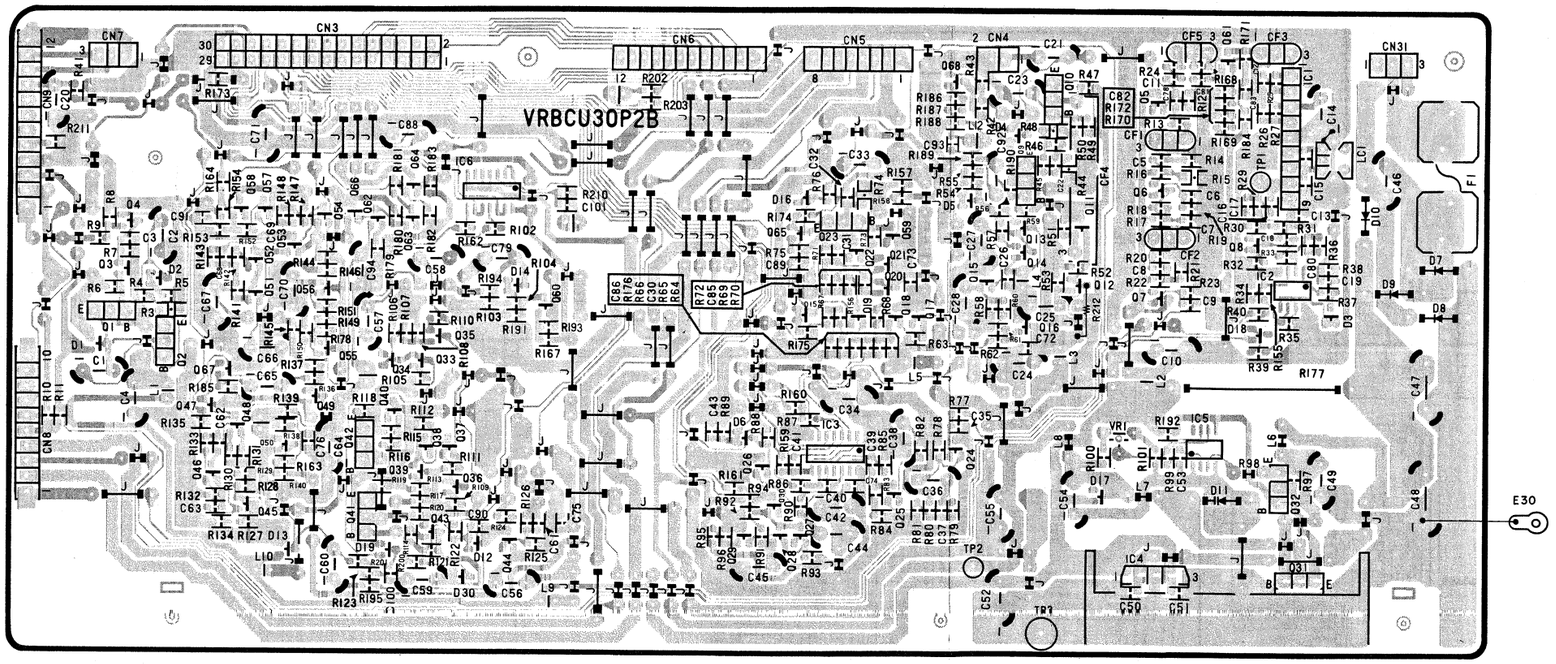
ANALOG BOARD AND REAR BOARD

REAR BOARD



(PATTERN SIDE)

ANALOG BOARD



(PATTERN SIDE)

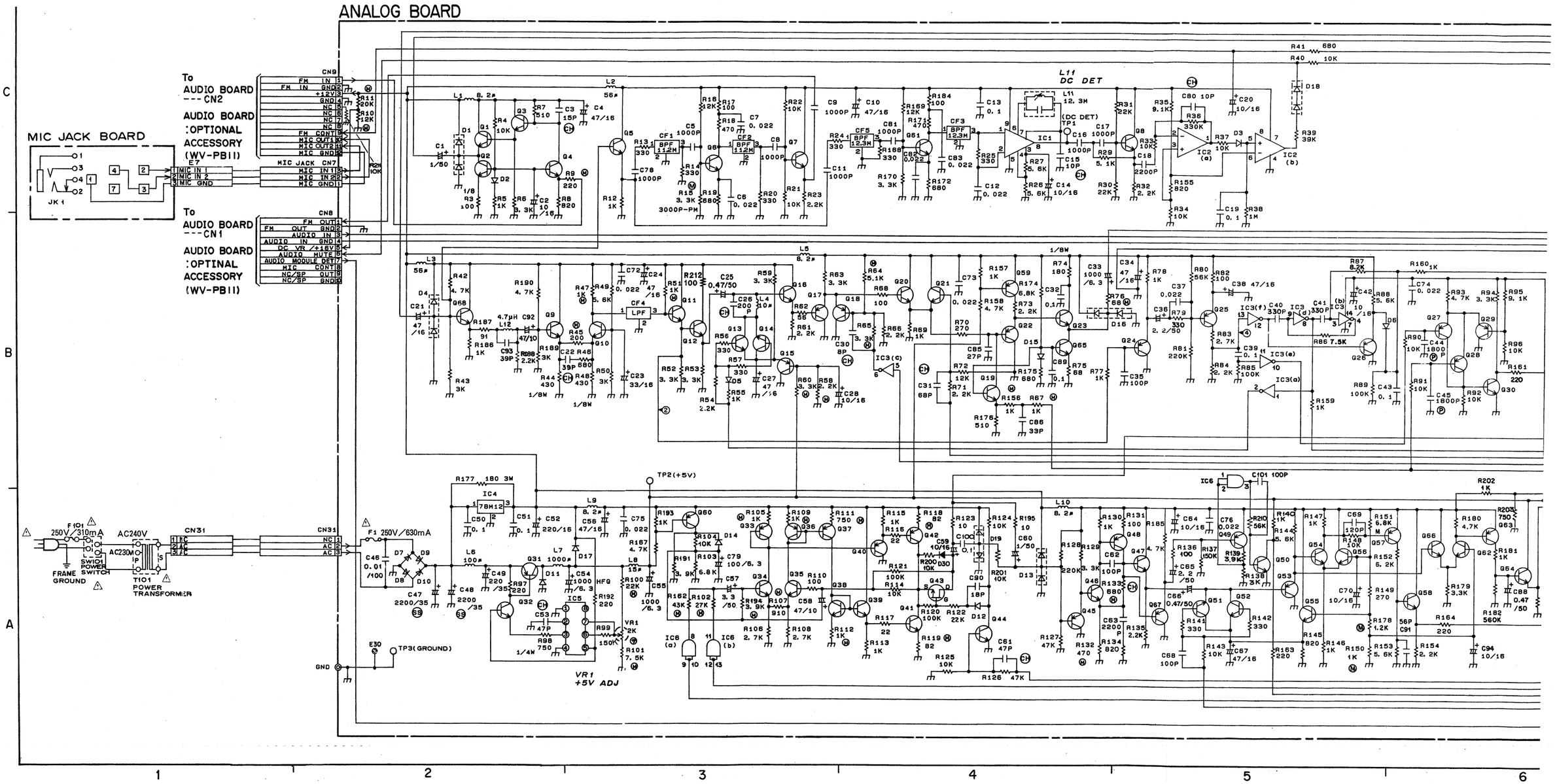
REAR BOARD
<PATTERN SIDE>

D1	C5
D2	C5
D3	C5
D4	C4
D9	C5
D10	C5
D13	C4
D14	C4
D15	C4
D16	C4
D17	C4
D18	C4
D19	C4
D20	C4

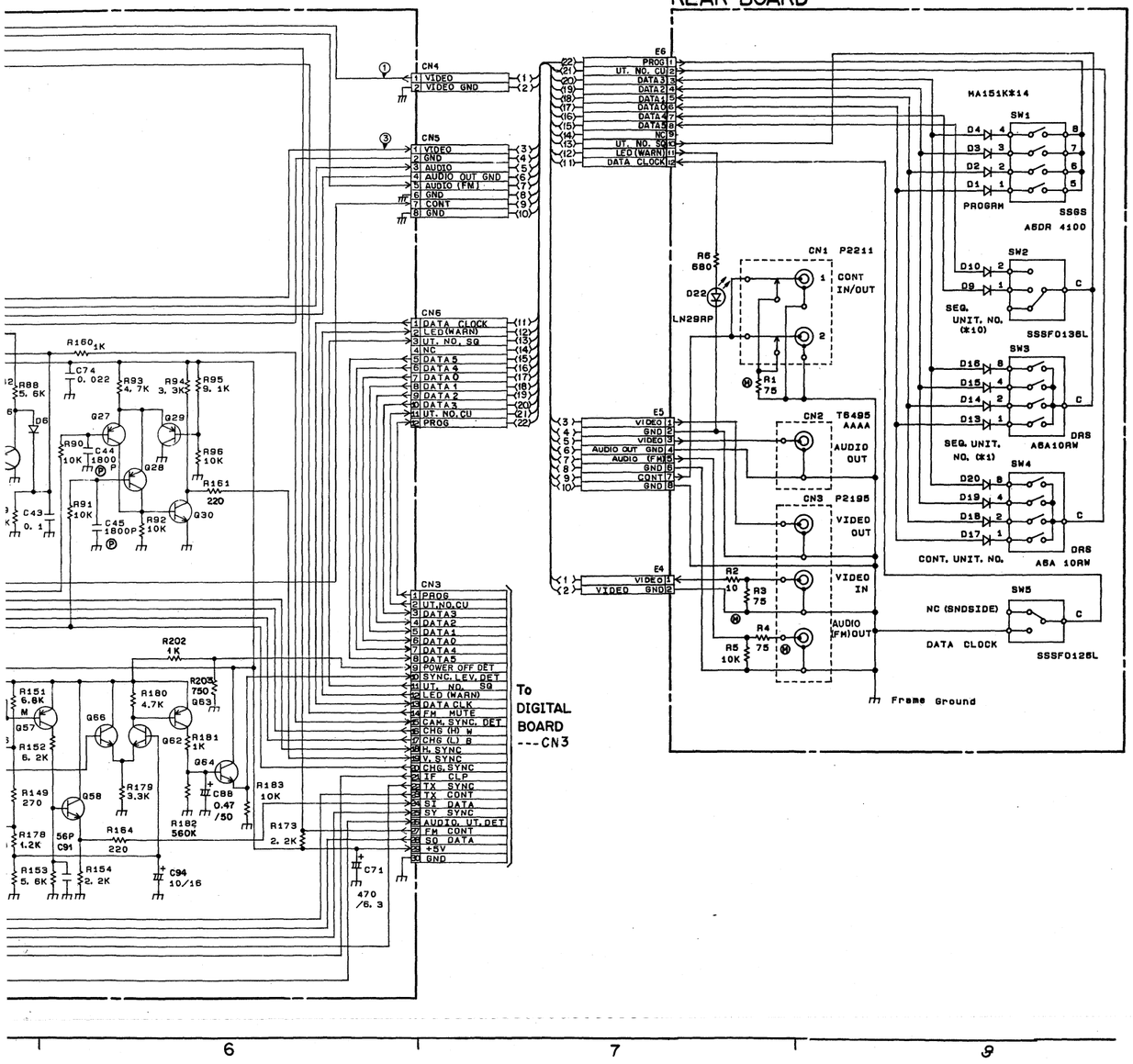
ANALOG BOARD
<PATTERN SIDE>

IC2	B5	Q46	A1
IC3	A3	Q47	A1
IC5	A4	Q48	A1
IC6	B2	Q49	A2
Q3	B1	Q50	A2
Q4	B1	Q51	B1
Q5	B4	Q52	B1
Q6	B4	Q53	B2
Q7	B4	Q54	B2
Q8	B5	Q55	B2
Q11	B4	Q56	B2
Q12	B4	Q57	B1
Q13	B4	Q58	B1
Q14	B4	Q59	B3
Q15	B4	Q60	B2
Q16	B4	Q61	B4
Q17	B3	Q62	B2
Q18	B3	Q63	B2
Q19	B3	Q64	B2
Q20	B3	Q65	B3
Q21	B3	Q66	B2
Q22	B3	Q67	B1
Q24	A4	Q68	B4
Q25	A3	D1	B1
Q26	A3	D2	B1
Q27	A3	D3	B5
Q28	A3	D4	B4
Q29	A3	D5	B4
Q30	A3	D6	A3
Q33	B2	D12	A2
Q34	B2	D13	A2
Q35	B2	D14	B2
Q36	A2	D15	B3
Q37	A2	D16	B3
Q38	A2	D17	A4
Q39	A2	D18	B5
Q40	A2	D19	A2
Q43	A2	D30	A2
Q44	A2		
Q45	A1		

SCHEMATIC DIAGRAM OF ANALOG BOARD, R



NALOG BOARD, REAR BOARD AND MIC JACK BOARD



ANALOG BOARD <PATTERN SIDE>

IC1	C4
IC2	C5
IC3	B4, B5
IC4	A2
IC5	A3
IC6	A3, B5
Q1	C2
Q2	C2
Q3	C2
Q4	C2
Q5	C3
Q6	C3
Q7	C3
Q8	C5
Q9	B2
Q10	B3
Q11	B3
Q12	B3
Q13	B3
Q14	B3
Q15	B3
Q16	B3
Q17	B3
Q18	B4
Q19	B4
Q20	B4
Q21	B4
Q22	B4
Q23	B4
Q24	B5
Q25	B4
Q26	B5
Q27	B6
Q28	B6
Q29	B6
Q30	B6
Q31	A2
Q32	A2
Q33	A3
Q34	A3
Q35	A3
Q36	A3
Q37	A3
Q38	A3
Q39	A3
Q40	A3
Q41	A4
Q42	A4
Q43	A4
Q44	A4
Q45	A4
Q46	A4
Q47	A5
Q48	A5
Q49	A5
Q50	A5
Q51	A5
Q52	A5
Q53	A5
Q54	A5
Q55	A5
Q56	A5
Q57	A6
Q58	A6
Q59	B4
Q60	A3
Q61	C4
Q62	A6
Q63	A6
Q64	A6
Q65	B4
Q66	A6
Q67	A5
Q68	B2
D1	C2
D2	C2
D3	C5
D4	B2
D5	B3
D6	B5
D7	A2
D8	A2
D9	A2
D10	A2
D11	A2
D12	A4
D13	A4
D14	A3
D15	B4
D16	B4
D17	A3
D18	C5
D19	A4
D30	A4

REAR BOARD

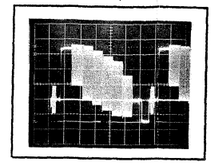
D1	C8
D2	C8
D3	C8
D4	C8
D9	B8
D10	C8
D13	B8
D14	B8
D15	B8
D16	B8
D17	B8
D18	B8
D19	B8
D20	B8
D22	B7

LED BOARD

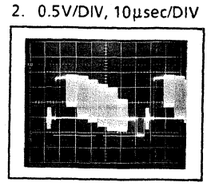
D1	E1

(WAVE FORMS)

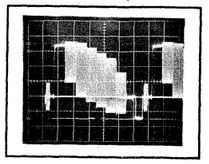
1. 0.2V/DIV, 10μsec/DIV



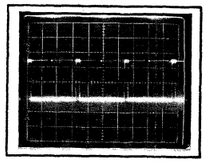
2. 0.5V/DIV, 10μsec/DIV



3. 0.2V/DIV, 20μsec/DIV



4. 2V/DIV, 20μsec/DIV



ANALOG BOARD <VOLTAGES>

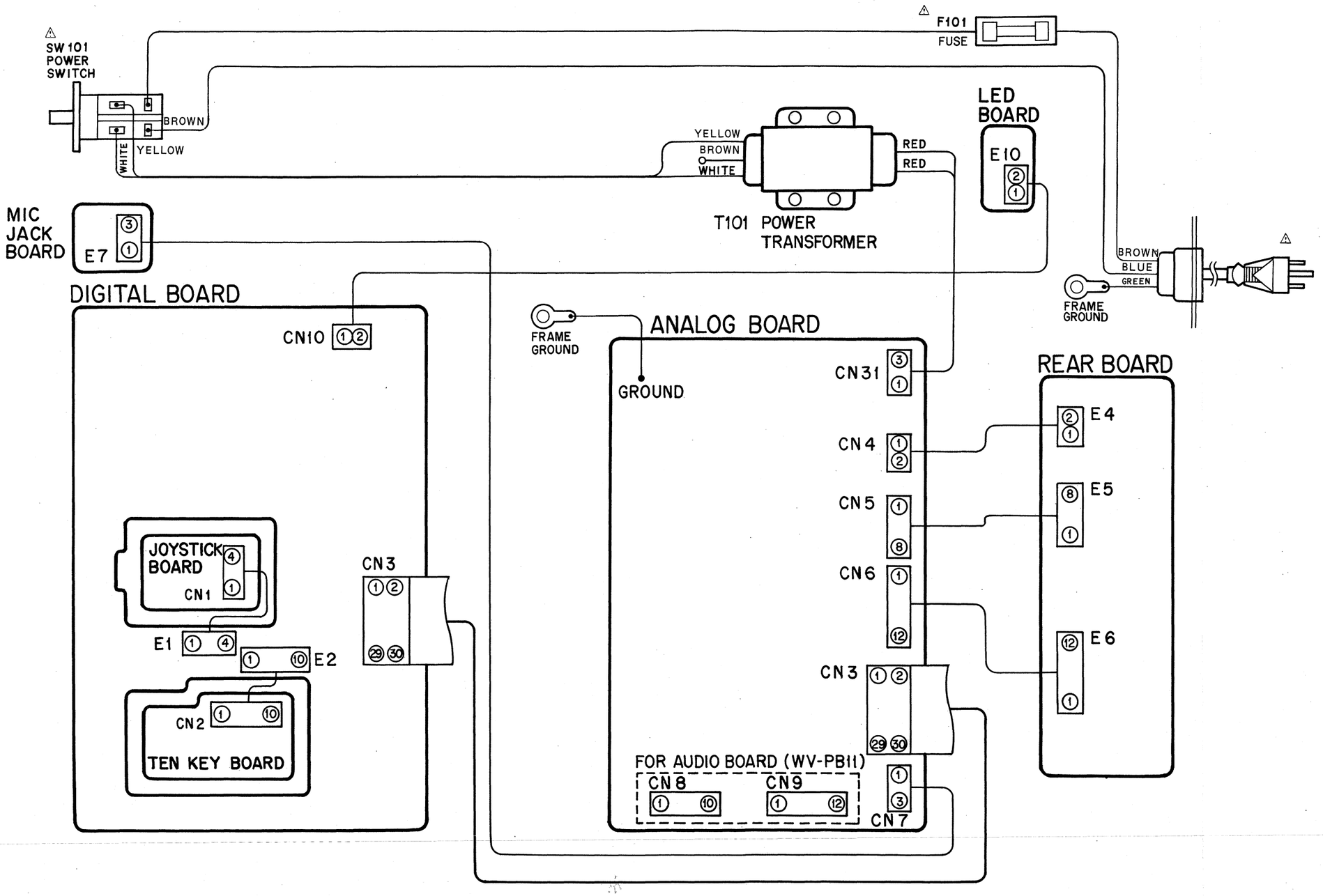
	B	C	E
Q1	10.7	12.0	10.0
2	1.6	10.0	1.0
3	11.4	12.0	10.7
4	1.6	11.4	1.0
5	4.5	11.9	3.4
6	2.6	10.4	1.9
7	6.0	11.9	5.3
8	5.8	11.9	5.2
9	4.4	11.9	3.6
10	4.1	8.8	3.3
11	8.9	11.9	8.3
12	8.3	11.9	7.7
13	3.3	2.7	2.7
14	3.3	2.7	2.7
15	2.0	0	2.7
16	2.7	11.9	2.1
17	2.1	0	2.7
18	4.0	0	2.7
19	1.6	2.0	1.0
20	2.7	12.0	2.1
21	0	12.0	2.1
22	2.0	0	2.7
23	2.7	9.4	2.0
24	8.3	0	9.0
25	11.1	11.6	11.7
26	0	0	0.7
27	5.0	0	3.2
28	4.1	0	3.2
29	2.6	0	3.2
30	0	5.0	0
31	27.9	5.1	27.8
32	11,9	27.8	11.5

	B	C	E
Q33	9.7	9.7	10.4
34	4.7	9.7	3.9
35	4.5	10.0	3.8
36	10.0	10.0	10.7
37	10.0	2.3	10.7
38	2.3	2.3	1.7
39	2.3	12.0	1.7
40	9.7	0	10.3
41	1.7	4.7	0.9
43	10.3	4.7	11.1
44	0.5	2.6	0
45	2.5	0	3.2
46	3.2	10.9	2.5
47	5.5	12.0	4.9
48	10.9	5.5	11.5
49	13.0	0.9	12.0
50	-	4.7	0
51	0.1	2.2	2.1
52	0.1	2.1	2.2
53	2.1	0	2.7
54	2.7	12.0	2.5
55	2.8	12.0	2.2
56	3.2	12.0	2.5
57	12.0	0.2	12.0
58	0.1	12.0	0.1
59	11.3	11.9	12.0
60	11.3	12.0	12.0
61	2.5	10.5	1.8
62	1.3	11.9	2.1
64	11.9	6.1	12.0
65	1.6	2.0	1.0
66	2.7	12.0	2.1
67	5.5	0	6.1
68	4.5	11.9	3.9

	IC1	IC2	IC3	IC4	IC5	IC6
Pin 1	1.9	6.0	0	27.8	0	0.4
2	1.9	6.0	5.0	0	1.2	0.4
3	0	6.0	0.3	12.0	10.7	0.3
4	0	0	5.0		0	0
5	0	5.6	0.1		11.9	0
6	3.9	6.5	5.0		0.6	0
7	4.0	1.3	0		1.3	0
8	4.9	11.9	0		0	4.7
9	11.9		5.0			4.7
10			5.0			4.7
11			0			0
12			0			0
13			5.2			0
14			5.0			5.0

	G	D	S
0.43	4.2	5.4	4,7

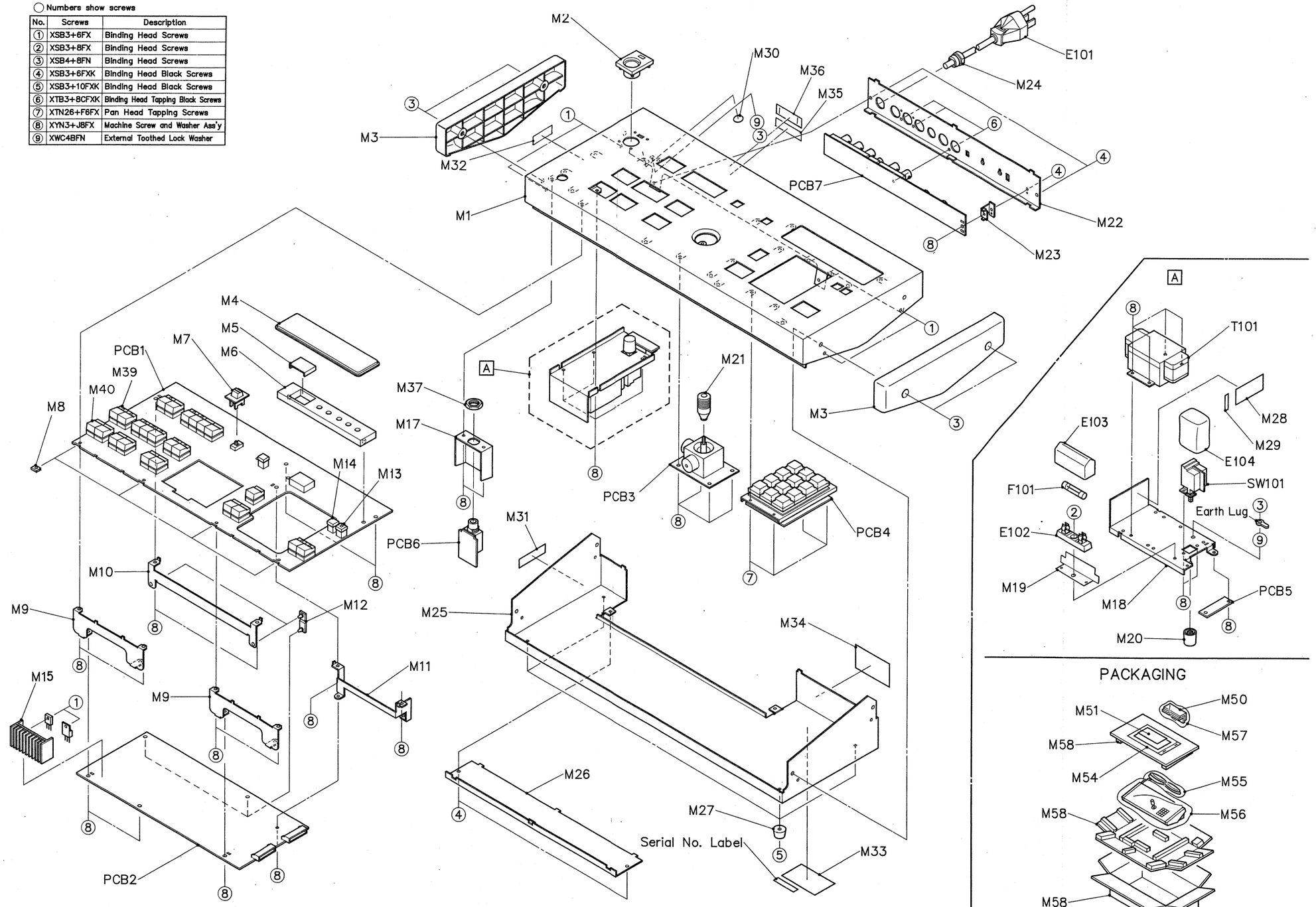
WIRING DIAGRAM



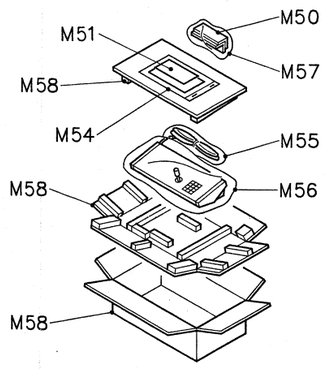
EXPLODED VIEW

◯ Numbers show screws

No.	Screws	Description
①	XSB3+6FX	Binding Head Screws
②	XSB3+8FX	Binding Head Screws
③	XSB4+8FN	Binding Head Screws
④	XSB3+6FXK	Binding Head Black Screws
⑤	XSB3+10FXK	Binding Head Black Screws
⑥	XTB3+8CFXK	Binding Head Tapping Black Screws
⑦	XTN26+F6FX	Pan Head Tapping Screws
⑧	XYN3+J8FX	Machine Screw and Washer Ass'y
⑨	XWC4BFN	External Toothed Lock Washer



PACKAGING



REPLACEMENT PARTS LIST

Important Notice

1. Components identified by "⚠" mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
2. Printed circuit board assembly with mark (NLA) is no longer available after production discontinuation of the complete set.

REF.NO.	PART NO.	DESCRIPTION
MISCELLANEOUS		
T101 ⚠	YWPTCU300	Power Transformer
SW101 ⚠	YWESB99682V	Power Switch
F101 ⚠	XBA2C031ET0A	Current Fuse 0.315A 250V
E101 ⚠	YFHBS308B	AC Power Cord for WV-CU300/B
	YFKPGTSA25	AC Power Cord for WV-CU300/A
	YFVM030908A	AC Power Cord for WV-CU300/G
E102	YWX-N1153-07	Fuse Holder
E103	YF840620B	Insulator Cover for Fuse
E104	YWSB2942UL	Insulator Cover for Switch
M1	YWV5EA0927A1	Upper Cover
M2	YWA5CD0009A3	Card Holder
M3	YWV5EA0925A2	Side Cover
M4	YWV5WA1154A4	Display Panel
M5	YWV5WA1157A4	Panel Cover
M6	YWV2FA0501A3	Panel Holder Cushion
M7	YWV5RA0319A3	Knob
M9	YWV2SA1765A4	Mounting Angle
M10	YWV2SA1766A3	Mounting Angle for Analog Board
M11	YWV2SA1767A3	Mounting Angle for Audio
M12	PU47613	Guide
M13	YWV6JA0106A4	Button
M14	YWV6JA0107A4	Button
M17	YWV2SA1763A4	Mounting Angle
M18	YWV2SA1764A4	Mounting Angle
M19	YFV2PA0190A4	Insulator
M20	YWA5RG0141A3	Knob
M21	YWV5RA0318A4	Knob
M22	YWV2KA0633A3	Rear Chassis
M23	YWV2SA1768A4	Mounting Angle
M24	YWSR6W1	Cord Clamp
M25	YWV5EA0926A1	Bottom Cover
M26	YWV2KA0634A3	Blank Chassis
M27	YWV5350WB01	Rubber Foot
M28	YFV7MA0120A4	Safety Label
M29	YFV7MA0203A4	Fuse Label
M30	YWV7SA1274A4	System Earth Label
M31	YFV7MA0099A4	Caution Label
M32	YWV7MA0380A4	Safety Label
M33	YWV7QA2534A4	Main Label for WV-CU300/B
	YWV7QA2535A4	Main Label for WV-CU300/G
	YWV7QA2536A4	Main Label for WV-CU300/A
M34	YWV7MA0384A4	Caution Label for Panel Change
M35	YWV7MA0015A4	Safety Label for WV-CU300/G
M36	YWV7MA0081A4	Safety Label for WV-CU300/G
M37	HLJ099901250	Nut

REF.NO.	PART NO.	DESCRIPTION	
DIGITAL BOARD			
PCB1 (NLA)	YWVKBCU30E1A	Printed Circuit Board Assy	
IC1	M51951ASL	IC	
IC2	YWM51951BSL	IC	
IC6	MN74HC02S	IC	
IC7	YWM50554001S	LSI	
IC8	MN74HC32S	IC	
IC9	MN74HC02S	IC	
IC10,11	YWM66311FP	IC	
IC12	MN74HC138S	LSI	
IC13	YWBR93CS46F	IC	
IC14	MN53080LBE2	IC	
IC15	YWM66220FP	IC	
IC17	YW75P116C030	LSI	
Q1,2	2SD601-RS	Transistor	
Q3	2SB709-QRS	Transistor	
Q4	2SD601-RS	Transistor	
D1,2	LN28RP	LED	
D3-11	YWSLH38DC	Diode	
D12-14	SLH38MC	LED	
D15-17	LN39GP	LED	
D18	LN524RAS	LED	
D22-25	MA151WK	Diode	
D26	MA151K	Diode	
D27-31	MA151WK	Diode	
D32	MA151K	Diode	
D33	MA151WK	Diode	
D34,35	MA151K	Diode	
D36	MA151WK	Diode	
D37,38	MA151K	Diode	
R1-11	YF2116471JT	Carbon	470 ohms 1/16W
R12-14	YF2116331JT	Carbon	330 ohms 1/16W
R15	YF2116471JT	Carbon	470 ohms 1/16W
R16	YF2116331JT	Carbon	330 ohms 1/16W
R17-30	YF2116471JT	Carbon	470 ohms 1/16W
R31,32	YF2116331JT	Carbon	330 ohms 1/16W
R33	YF2116223JT	Carbon	22K ohms 1/16W
R34	YF2116222GT	Carbon	2.2K ohms 1/16W
R35	YF2116223JT	Carbon	22K ohms 1/16W
R36,37	YF2116222GT	Carbon	2.2K ohms 1/16W
R38	YF2116223JT	Carbon	22K ohms 1/16W
R39	YF2116222GT	Carbon	2.2K ohms 1/16W
R40	YF2116223JT	Carbon	22K ohms 1/16W
R41	YF2116104JT	Carbon	100K ohms 1/16W
R42	YF2116563JT	Carbon	56K ohms 1/16W
R43	YW2116105JT	Carbon	1M ohms 1/16W
R44	YF2116474JT	Carbon	470K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R45	YF2116562JT	Carbon	5.6K ohms 1/16W
R46,47	YF2116103JT	Carbon	10K ohms 1/16W
R50	YF2116102GT	Carbon	1K ohms 1/16W
R51-53	YF2116221JT	Carbon	220 ohms 1/16W
R54	YF2116472GT	Carbon	4.7K ohms 1/16W
R57	YF2116221JT	Carbon	220 ohms 1/16W
R58	YF2116222GT	Carbon	2.2K ohms 1/16W
R59,60	YF2116223JT	Carbon	22K ohms 1/16W
R63	YW2116105JT	Carbon	1M ohms 1/16W
R64	YF2116102GT	Carbon	1K ohms 1/16W
R65,66	YF2116221JT	Carbon	220 ohms 1/16W
R68	YF2116223JT	Carbon	22K ohms 1/16W
R69	YF2116221JT	Carbon	220 ohms 1/16W
R70	YF2116102GT	Carbon	1K ohms 1/16W
R71,72	YF2116223JT	Carbon	22K ohms 1/16W
R74	YW2116105JT	Carbon	1M ohms 1/16W
R75,76	YF2116223JT	Carbon	22K ohms 1/16W
R77-84	YF2116221JT	Carbon	220 ohms 1/16W
R85,86	YF2116223JT	Carbon	22K ohms 1/16W
R87	YF2116563JT	Carbon	56K ohms 1/16W
R88	YF2116681JT	Carbon	680 ohms 1/16W
R89-91	YF2116223JT	Carbon	22K ohms 1/16W
R100-103	YF2116223JT	Carbon	22K ohms 1/16W
Z5-9	EXBZ5E223J	Block Resistor	
C1	YF400270CHJT	Ceramic	27 pF
C2	YF400221CHJT	Ceramic	220 pF
C3	ECEA1AS470	Electrolytic	47 µF 10V
C4	YF400220CHJT	Ceramic	22 pF
C5	YF400150CHJT	Ceramic	15 pF
C6	YF400222XKT	Ceramic	2200 pF
C7	YF400104FZT	Ceramic	0.1 µF
C8,9	ECEA1AS470	Electrolytic	47 µF 10V
C10	YF400221CHJT	Ceramic	220 pF
C11	ECEA1AS470	Electrolytic	47 µF 10V
C12	YF400221CHJT	Ceramic	220 pF
C13	YW400102CHJT	Ceramic	1000 pF
C14	YF400221CHJT	Ceramic	220 pF
C17	ECEA1AS470	Electrolytic	47 µF 10V
C18	YF400103XKT	Ceramic	0.01 µF
C19	ECEA1CKS100	Electrolytic	10 µF 10V
C20	YF400103XKT	Ceramic	0.01 µF
C21	ECEA1CKS100	Electrolytic	10 µF 10V
C22	YF400103XKT	Ceramic	0.01 µF
C23	ECEA1CKS100	Electrolytic	10 µF 10V
C24	YF400103XKT	Ceramic	0.01 µF
C25	ECEA1CKS100	Electrolytic	10 µF 10V
C26,27	YF400103XKT	Ceramic	0.01 µF
C28,29	ECEA1AS470	Electrolytic	47 µF 10V
C30	YF400103XKT	Ceramic	0.01 µF
C31	ECEA1AKS101	Electrolytic	100 µF 10V

REF.NO.	PART NO.	DESCRIPTION	
C32	ECEA1AS470	Electrolytic	47 µF 10V
C33,34	ECEA0JKS331	Electrolytic	330 µF 6.3V
C35,36	YF400103XKT	Ceramic	0.01 µF
C37	YF400101CHJT	Ceramic	100 pF
C38	YF400221CHJT	Ceramic	220 pF
C50	ECEA1AKS220	Electrolytic	22 µF 10V
CT1	YWTZ03R300NR	Trimmer Capacitor	30 pH
L1	EL05SI150J	Coil	15 µH
L2-6	EL05SI8R2K	Coil	8.2 µH
SW1-8	YWAB12HA130	Push Switch	
SW9	YWSSS322	Slide Switch	
SW10-13	YWAB12HA130	Push Switch	
SW14,15	YWSKECAF	Push Switch	
SW16	YWSKECFS	Push Switch	
SW17-28	YWAB12HA130	Push Switch	
X1	YWHC49UA1773	Crystal Oscillator	
X2	YWCST8R10MTW	Crystal Oscillator	
X3	YFEF0-FC4004	Crystal Oscillator	
X4	YFLQV3M2760G	Crystal Oscillator	
CN3	FCN795P030L0	Connector	
BZ1	YFPKM244A0	Buzzer	
J4-13	YF21160R00T	Jumper	
J17,20	YF21160R00T	Jumper	
J22	YF21160R00T	Jumper	
CN10	EMCS0250ZL	2 pin Connector	
E1	KL02	Spacer	
M8	YFV1KA0002A4	Washer	
M39	YWV6JA0074A3	Button	
M40	YWV6JA0075A3	Button	

ANALOG BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB2 (NLA)	YWVKBCU30E2A	Printed Circuit Board Assy
IC1	YWTA7303P	IC
IC2	NJM4558M	IC
IC3	MN74HCU04S	IC
IC4	NJM78M12A	IC
IC5	YWNJM2352M	IC
IC6	MN74HC08S	IC
Q1,2	2SD636-QRS	Transistor
Q3-5	2SD601-RS	Transistor
Q6	2SC2404-CD	Transistor
Q7,8	2SD601-RS	Transistor
Q9,10	2SC2377CD	Transistor
Q11-14	2SD601-RS	Transistor
Q15	2SB709-QRS	Transistor
Q16	2SD601-RS	Transistor
Q17,18	2SB709-QRS	Transistor
Q19	2SC2404-CD	Transistor
Q20,21	2SD601-RS	Transistor
Q22	2SB709-QRS	Transistor
Q23	2SD636-QRS	Transistor
Q24-29	2SB709-QRS	Transistor
Q30	2SD601-RS	Transistor
Q31	2SA886-QR	Transistor
Q32	2SD636-QRS	Transistor
Q33	2SA1022-BC	Transistor
Q34,35	2SC2404-CD	Transistor
Q36,37	2SA1022-BC	Transistor
Q38,39	2SD601-RS	Transistor
Q40	2SB709-QRS	Transistor
Q41	2SC2206-BC	Transistor
Q42	2SA1254-BC	Transistor
Q43	2SK620	Transistor
Q44	2SD601-RS	Transistor
Q45	2SB709-QRS	Transistor
Q46,47	2SD601-RS	Transistor
Q48,49	2SB709-QRS	Transistor
Q50-52	2SD601-RS	Transistor
Q53	2SB709-QRS	Transistor
Q54-56	2SD601-RS	Transistor
Q57	2SB709-QRS	Transistor
Q58	2SD601-RS	Transistor
Q59,60	2SB709-QRS	Transistor
Q61	2SC2404-CD	Transistor
Q62	2SD601-RS	Transistor
Q63	2SB709-QRS	Transistor
Q64-66	2SD601-RS	Transistor
Q67	2SB709-QRS	Transistor
Q68	2SD601-RS	Transistor
D1	MA153	Diode
D2,3	MA151A	Diode
D4	MA153	Diode
D5,6	MA151A	Diode
D7-10	ERB12-01	Diode
D11	EK14A	Diode
D12	MA151A	Diode
D13	MA153	Diode
D14,15	MA151A	Diode
D16-19	MA153	Diode
D30	MA151A	Diode
R3	ERJ8GCSG101	Carbon 100 ohms 1/8W
R4	YF2116103JT	Carbon 10K ohms 1/16W
R5	YF2116102GT	Carbon 1K ohms 1/16W
R6	YF2116332JT	Carbon 3.3K ohms 1/16W
R7	YWR1220P561D	Metal 560 ohms
R8	YF2116821GT	Carbon 820 ohms 1/16W
R9	YWR1220P221D	Metal 220 ohms
R10	R1220P123D	Metal 12K ohms
R11	YFR1220P203D	Metal 20K ohms
R12	YF2116102GT	Carbon 1K ohms 1/16W
R13,14	YF2116331JT	Carbon 330 ohms 1/16W
R15	L311J332G302	Metal 3K ohms
R16	YF2116123JT	Carbon 12K ohms 1/16W
R17	YF2116101JT	Carbon 100 ohms 1/10W
R18	YF2116471JT	Carbon 470 ohms 1/16W
R19	YF2116681JT	Carbon 680 ohms 1/16W
R20	YF2116331JT	Carbon 330 ohms 1/16W
R21,22	YF2116103JT	Carbon 10K ohms 1/16W
R23	YF2116222GT	Carbon 2.2K ohms 1/16W
R24,25	YF2116331JT	Carbon 330 ohms 1/16W
R26,27	YF2116562JT	Carbon 5.6K ohms 1/16W
R29	YF2116512JT	Carbon 5.1K ohms 1/16W
R30,31	YF2116223JT	Carbon 22K ohms 1/16W
R32	YF2116222GT	Carbon 2.2K ohms 1/16W
R33,34	YF2116103JT	Carbon 10K ohms 1/16W
R35	YF2116912GT	Carbon 9.1K ohms 1/16W
R36	YF2116334JT	Carbon 330K ohms 1/16W
R37	YF2116103JT	Carbon 10K ohms 1/16W
R38	YW2116105JT	Carbon 1M ohms 1/16W
R39	YF2116393GT	Carbon 39K ohms 1/16W
R40	YF2116103JT	Carbon 10K ohms 1/16W
R41	YF2116681JT	Carbon 680 ohms 1/16W
R42	YF2116472GT	Carbon 4.7K ohms 1/16W
R43	YF2116302GT	Carbon 3K ohms 1/16W
R44	ERJ8GCSG431	Carbon 430 ohms 1/8W
R45	YWR1220P201D	Metal 200 ohms
R46	YF2116681JT	Carbon 680 ohms 1/16W
R47	YWR1220P102D	Metal 1K ohms
R48	ERJ8GCSG431	Carbon 430 ohms 1/8W
R49	YF2116562JT	Carbon 5.6K ohms 1/16W
R50	YF2116302GT	Carbon 3K ohms 1/16W
R51	YWR1220P102D	Metal 1K ohms
R52,53	YF2116332JT	Carbon 3.3K ohms 1/16W
R54	YF2116222GT	Carbon 2.2K ohms 1/16W
R55	YF2116102GT	Carbon 1K ohms 1/16W
R56,57	YF2116331JT	Carbon 330 ohms 1/16W
R58	YFR1220P222D	Metal 2.2K OHMS

REF.NO.	PART NO.	DESCRIPTION	
R59	YF2116332JT	Carbon	3.3K ohms 1/16W
R60	YWR1220P332D	Metal	3.3K ohms
R61	YF2116222GT	Carbon	2.2K ohms 1/16W
R62	YF2116560JT	Carbon	56 ohms 1/16W
R63	YF2116332JT	Carbon	3.3K ohms 1/16W
R64	YWR1220P512D	Metal	5.1K ohms
R65	YWR1220P332D	Metal	3.3K ohms
R66	YF2116222GT	Carbon	2.2K ohms 1/16W
R67	YWR1220P102D	Metal	1K ohms
R68	YF2116101JT	Carbon	100 ohms 1/10W
R69	YF2116102GT	Carbon	1K ohms 1/16W
R70	YF2116271JT	Carbon	270 ohms 1/16W
R71	YF2116222GT	Carbon	2.2K ohms 1/16W
R72	YF2116123JT	Carbon	12K ohms 1/16W
R73	YF2116222GT	Carbon	2.2K ohms 1/16W
R74	ERJ8GEYG181	Carbon	180 ohms 1/8W
R75	YF2116680JT	Carbon	68 ohms 1/16W
R76	YWR1220P680D	Metal	68 ohms
R77,78	YF2116102GT	Carbon	1K ohms 1/16W
R79	YF2116331JT	Carbon	330 ohms 1/16W
R80	YF2116563JT	Carbon	56K ohms 1/16W
R81	YF2116224JT	Carbon	220K ohms 1/16W
R82	YF2116101JT	Carbon	100 ohms 1/10W
R83	YF2116272JT	Carbon	2.7K ohms 1/16W
R84	YF2116222GT	Carbon	2.2K ohms 1/16W
R85	YF2116104JT	Carbon	100K ohms 1/16W
R86	YF2116752JT	Carbon	7.5K ohms 1/16W
R87	YF2116822JT	Carbon	8.2K ohms 1/16W
R88	YF2116562JT	Carbon	5.6K ohms 1/16W
R89	YF2116104JT	Carbon	100K ohms 1/16W
R90-92	YF2116103JT	Carbon	10K ohms 1/16W
R93	YF2116472GT	Carbon	4.7K ohms 1/16W
R94	YF2116332JT	Carbon	3.3K ohms 1/16W
R95	YF2116912GT	Carbon	9.1K ohms 1/16W
R96	YF2116103JT	Carbon	10K ohms 1/16W
R97	YF2116221JT	Carbon	220 ohms 1/16W
R98	ERDS2TJ751	Carbon	750 ohms 1/4W
R99	YF2116154JT	Carbon	150K ohms 1/16W
R100	YWR1220P223D	Metal	22K ohms
R101	YWR1220P752D	Metal	7.5K ohms
R102	YWR1220P273D	Metal	27K ohms
R103	YF2116682JT	Carbon	6.8K ohms 1/16W
R104	YF2116103JT	Carbon	10K ohms 1/16W
R105	YWR1220P102D	Metal	1K ohms
R106	YF2116272JT	Carbon	2.7K ohms 1/16W
R107	YWR1220P911D	Metal	910 ohms
R108	YF2116272JT	Carbon	2.7K ohms 1/16W
R109	YWR1220P102D	Metal	1K ohms
R110	YF2116101JT	Carbon	100 ohms 1/10W
R111	YWR1220P751D	Metal	750 ohms
R112	YWR1220P102D	Metal	1K ohms
R113	YF2116102GT	Carbon	1K ohms 1/16W
R114	YF2116103JT	Carbon	10K ohms 1/16W
R115	YF2116102GT	Carbon	1K ohms 1/16W
R116,117	YF2116220JT	Carbon	22 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R118,119	R1220P820D	Metal	82 ohms
R120,121	YF2116104JT	Carbon	100K ohms 1/16W
R122	YF2116223JT	Carbon	22K ohms 1/16W
R123	YF2116100JT	Carbon	10 ohms 1/10W
R124,125	YF2116103JT	Carbon	10K ohms 1/16W
R126,127	YF2116473GT	Carbon	47K ohms 1/16W
R128	YF2116224JT	Carbon	220K ohms 1/16W
R129	YF2116332JT	Carbon	3.3K ohms 1/16W
R130	YF2116102GT	Carbon	1K ohms 1/16W
R131	YF2116101JT	Carbon	100 ohms 1/10W
R132	YWR1220P471D	Metal	470 ohms
R133	R1220P681D	Metal	680 ohms
R134	YF2116821GT	Carbon	820 ohms 1/16W
R135	YF2116222GT	Carbon	2.2K ohms 1/16W
R136	YF2116101JT	Carbon	100 ohms 1/10W
R137	YF2116154JT	Carbon	150K ohms 1/16W
R138	YF2116302GT	Carbon	3K ohms 1/16W
R139	YF2116392JT	Carbon	3.9K ohms 1/16W
R140	YF2116102GT	Carbon	1K ohms 1/16W
R141,142	YF2116331JT	Carbon	330 ohms 1/16W
R143	YF2116103JT	Carbon	10K ohms 1/16W
R144	YF2116562JT	Carbon	5.6K ohms 1/16W
R145	YF2116821GT	Carbon	820 ohms 1/16W
R146,147	YF2116102GT	Carbon	1K ohms 1/16W
R148	YF2116103JT	Carbon	10K ohms 1/16W
R149	YF2116271JT	Carbon	270 ohms 1/16W
R150	YWR1220P102D	Metal	1K ohms
R151	YWR1220P682D	Metal	6.8K ohms
R152	YF2116622JT	Carbon	6.2K ohms 1/16W
R153	YF2116562JT	Carbon	5.6K ohms 1/16W
R154	YF2116222GT	Carbon	2.2K ohms 1/16W
R155	YF2116821GT	Carbon	820 ohms 1/16W
R156	YWR1220P102D	Metal	1K ohms
R157	YF2116102GT	Carbon	1K ohms 1/16W
R158	YF2116472GT	Carbon	4.7K ohms 1/16W
R159,160	YF2116102GT	Carbon	1K ohms 1/16W
R161	YF2116221JT	Carbon	220 ohms 1/16W
R162	YFR1220P433D	Metal	43K ohms
R163,164	YF2116221JT	Carbon	220 ohms 1/16W
R167	YF2116472GT	Carbon	4.7K ohms 1/16W
R168	YF2116331JT	Carbon	330 ohms 1/16W
R169	YF2116123JT	Carbon	12K ohms 1/16W
R170	YF2116332JT	Carbon	3.3K ohms 1/16W
R171	YF2116471JT	Carbon	470 ohms 1/16W
R172	YF2116681JT	Carbon	680 ohms 1/16W
R173	YF2116222GT	Carbon	2.2K ohms 1/16W
R174	YF2116682JT	Carbon	6.8K ohms 1/16W
R175	YF2116681JT	Carbon	680 ohms 1/16W
R176	YF2116511JT	Carbon	510 ohms 1/16W
R177	ERG3ANJ181	Metal	180 ohms 3W
R178	YWR1220P122D	Metal	1.2K ohms
R179	YF2116332JT	Carbon	3.3K ohms 1/16W
R180	YF2116472GT	Carbon	4.7K ohms 1/16W
R181	YF2116102GT	Carbon	1K ohms 1/16W
R182	YF2116564JT	Carbon	560K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R183	YF2116103JT	Carbon	10K ohms 1/16W
R184	YF2116101JT	Carbon	100 ohms 1/10W
R185	YF2116472GT	Carbon	4.7K ohms 1/16W
R186	YF2116102GT	Carbon	1K ohms 1/16W
R187	2116910JT	Carbon	91 ohms 1/16W
R188	YF2116222GT	Carbon	2.2K ohms 1/16W
R189	YF2116302GT	Carbon	3K ohms 1/16W
R190	YF2116472GT	Carbon	4.7K ohms 1/16W
R191	YF2116392JT	Carbon	3.9K ohms 1/16W
R192	YF2116221JT	Carbon	220 ohms 1/16W
R193	YF2116102GT	Carbon	1K ohms 1/16W
R194	YFR1220P392D	Metal	3.9K ohms
R195	YF2116100JT	Carbon	10 ohms 1/10W
R200,201	YF2116103JT	Carbon	10K ohms 1/16W
R202	YF2116102GT	Carbon	1K ohms 1/16W
R203	YF2116751JT	Carbon	750 ohms 1/16W
R210	YF2116563JT	Carbon	56K ohms 1/16W
R211	YF2116103JT	Carbon	10K ohms 1/16W
R212	ERDS2FJ101	Carbon	100 ohms 1/4W
VR1	EVM38GA00B23	Variable Resistor	2K ohms
C1	ECEA1HU010	Electrolytic	1 µF 50V (SU)
C2	ECEA1CU100	Electrolytic	10 µF 16V
C3	YF400150CHJT	Ceramic	15 pF
C4	ECEA1CU470	Electrolytic	47 µF 16V
C5	YF400102XKT	Ceramic	1000 pF
C6,7	YF400223XKT	Ceramic	0.022 µF
C8,9	YF400102XKT	Ceramic	1000 pF
C10	ECEA1CU470	Electrolytic	47 µF 16V
C11	YF400102XKT	Ceramic	1000 pF
C12	YF400223XKT	Ceramic	0.022 µF
C13	YF400104FZT	Ceramic	0.1 µF
C14	ECEA1CU100	Electrolytic	10 µF 16V
C15	YF400100CHJT	Ceramic	10 pF
C16,17	YF400102XKT	Ceramic	1000 pF
C18	YF400222XKT	Ceramic	2200 pF
C19	YF400104FZT	Ceramic	0.1 µF
C20	ECEA1CU100	Electrolytic	10 µF 16V
C21	ECEA1CU470	Electrolytic	47 µF 16V
C22	YF400390CHJT	Ceramic	39 pF
C23	ECEA1CU330	Electrolytic	33 µF 16V
C24	ECEA1CU470	Electrolytic	47 µF 16V
C25	ECEA1HUR47	Electrolytic	0.47 µF 50V
C26	YW400131CHJT	Ceramic	130 pF
C27	ECEA1CU470	Electrolytic	47 µF 16V
C28	ECEA1CU100	Electrolytic	10 µF 16V
C30	400080CHDT	Ceramic	8 pF
C31	YF400680CHJT	Ceramic	68 pF CH
C32	YF400104FZT	Ceramic	0.1 µF
C33	ECEA0JU102	Electrolytic	1000 µF 6.3V
C34	ECEA1CU470	Electrolytic	47 µF 16V
C35	YF400101CHJT	Ceramic	100 pF
C36	ECEA1HU2R2	Electrolytic	2.2 µF 50V
C37	YF400223XKT	Ceramic	0.022 F
C38	ECEA1CU470	Electrolytic	47 µF 16V
C39	YF400104FZT	Ceramic	0.1 µF

REF.NO.	PART NO.	DESCRIPTION	
C40,41	YF400331CHJT	Ceramic	330 pF
C42	ECEA1CU100	Electrolytic	10 µF 16V
C43	YF400104FZT	Ceramic	0.1 µF
C44,45	ECQB1H182JZ	Plastic	1800 pF
C46	ECQP1103GZ	Plastic	0.01 µF 100V
C47,48	ECEA1VSS222	Electrolytic	2200 µF 35V
C49	ECEA1VGE221	Electrolytic	220 µF 35V
C50,51	YF400104FZT	Ceramic	0.1 µF
C52	ECEA1CU221	Electrolytic	220 µF 16V
C53	YF400470CHJT	Ceramic	47 pF
C54	ECA0JFQ102	Electrolytic	1000 µF 6.3V
C55	ECEA0JU102	Electrolytic	1000 µF 6.3V
C56	ECEA1CU470	Electrolytic	47 µF 16V
C57	ECEA1HKS3R3	Electrolytic	3.3 µF 50V
	ECEA1HS3R3	Electrolytic	3.3 µF 50V
C58	ECEA1AKS470	Electrolytic	47 µF 10V
	ECEA1AU470	Electrolytic	47 µF 10V
C59	ECEA1CU100	Electrolytic	10 µF 16V
C60	ECEA1HU010	Electrolytic	1 µF 50V (SU)
C61	YF400470CHJT	Ceramic	47 pF
C62	YF400101CHJT	Ceramic	100 pF
C63	YF400222XKT	Ceramic	2200 pF
C64	ECEA1CU100	Electrolytic	10 µF 16V
C65	ECEA1HU2R2	Electrolytic	2.2 µF 50V
C66	ECEA1HUR47	Electrolytic	0.47 µF 50V
C67	ECEA1CU470	Electrolytic	47 µF 16V
C68	YF400101CHJT	Ceramic	100 pF
C69	YF400121CHJT	Ceramic	120 pF
C70	ECEA1CU100	Electrolytic	10 µF 16V
C71	ECEA0JU471	Electrolytic	470 µF 6.3V
C72-76	YF400223XKT	Ceramic	0.022 µF
C78	YF400102XKT	Ceramic	1000 pF
C79	ECEA0JKS101	Electrolytic	100 µF 6.3V
	ECEA0JS101	Electrolytic	100 µF 6.3V (SU)
C80	YF400100CHJT	Ceramic	10 pF
C81	YF400102XKT	Ceramic	1000 pF
C82,83	YF400223XKT	Ceramic	0.022 µF
C85	YF400270CHJT	Ceramic	27 pF
C86	YF400330CHJT	Ceramic	33 pF
C88	ECEA1HUR47	Electrolytic	0.47 µF 50V
C89	YF400104FZT	Ceramic	0.1 µF
C90	YF400180CHJT	Ceramic	18 pF
C91	YF400560CHJT	Ceramic	56 pF
C92	ECEA1AU470	Electrolytic	47 µF 10V
C93	YF400390CHJT	Ceramic	39 pF
C94	ECEA1CKS100	Electrolytic	10 µF 16V
	ECEA1CU100	Electrolytic	10 µF 16V
C100	YF400104FZT	Ceramic	0.1 µF
C101	YF400101CHJT	Ceramic	100 pF
L1	EL05SI8R2K	Coil	8.2 µH
L2,3	EL05SI560K	Coil	56 µH
L4	EL05SI100K	Coil	10 µH
L5	EL05SI8R2K	Coil	8.2 µH
L6	YWTSL07101K	Coil	100 µH
L7	YWTSL10102K	Coil	1000 µH

REF.NO.	PART NO.	DESCRIPTION
L8	YWTSL07150K	Coil 15 µH
L9,10	EL05SI8R2K	Coil 8.2 µH
L11	YWTLC1725Z	Coil
L12	YFEL05SI4R7K	Coil 4.7 µH
CF1,2	YWE112S	Ceramic Filter
CF3	YWSFE12R3MA	Ceramic Filter
CF4	ELB4M081	Filter
CF5	YWSFE12R3MA	Ceramic Filter
CN3	FCN794P030L0	30-pin Connector
CN4	EMCS0250Z	2-pin Connector
CN5	EMCS0850Z	8-pin Connector
CN6	EMCS1250Z	12-pin Connector
CN7	EMCS0350Z	3-pin Connector
CN8	YWS10BXHA	10-pin Connector
CN9	YWS12BXHA	12-pin Connector
CN31	YWB3BXHA	3-pin Connector
F1 ⚠	XBA2C063ET0A	Current Fuse 0.63A 250V
E1	YWSN5053	Fuse Holder
M15	YWV7DA0277A4	Heat Sink

JOYSTICK BOARD

PCB3 (NLA)	YWVKCCU30P1A	Printed Circuit Board Assy
R1,2	YF2116101JT	Carbon 100 ohms 1/16W
R3,4	YF2116223JT	Carbon 22K ohms 1/16W
VR1	YWRKJXC10KB2	Variable Resistor 10K ohms
C1-4	YF400104FZT	Ceramic 0.1 µF
CN1	EMCS0450Z	4-pin Connector

TEN-KEY BOARD

PCB4 (NLA)	YWVKDCU30P1A	Printed Circuit Board Assy
D1-6	MA151WK	Diode
SW1	YWKUCCBA903A	Push Switch
CN2	EMCS1050ZL	10-pin Connector

LED BOARD

PCB5	YWVRACU30P2B	Printed Board
D1	LN242RP	LED
E1	YWA2NA0300A4	LED Spacer

REF.NO.	PART NO.	DESCRIPTION

MIC JACK BOARD

PCB6	YWVRACU30P2B	Printed Board
JK1	YWLJ23083090	Jack

REAR BOARD

PCB7 (NLA)	YWVKCCU30P2A	Printed Circuit Board Assy
D1-4	MA151K	Diode
D9,10	MA151K	Diode
D13-20	MA151K	Diode
D22	LN29RD	LED
R1	YWR1220P750D	Metal 75 ohms
R2	YF2116100JT	Carbon 10 ohms 1/16W
R3,4	YWR1220P750D	Metal 75 ohms
R5	YF2116103JT	Carbon 10K ohms 1/16W
R6	YF2116681JT	Carbon 680 ohms 1/16W
SW1	YWA6DR4100	Switch
SW2	YWSSSF0136L	Slide Switch
SW3,4	YWA6A10RW	Rotary Switch
SW5	YWSSSF0126L	Slide Switch
CN1	YWP2211	Connector
CN2	YWT6495AAAA	Connector
CN3	YWP2195	Connector

ACCESSORY PARTS/PACKAGING PARTS

M50	YWV2SA1769A3	Rack Mounting Angle
M51	YWV8QA2456AN	Operating Instructions
M54	YWT20X35C03	Polyethylene Bag for Printed
M55	YWT20X35C03	Polyethylene Bag for Power Cord
M56	XZB45X63C05	Polyethylene Bag for System Controller
M57	YWT15X20C03	Polyethylene Bag for Rack Mounting Angle
M58	YWV9CA1614AN	Packaging Assy for WV-CU300/B
	YWV9CA1615AN	Packaging Assy for WV-CU300/G
	YWV9CA1616AN	Packaging Assy for WV-CU300/A

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ORDER NO. AVS9511057P8

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Parts Change Notice

Subject : Change of Buzzer

Model No. WV-CU300

Effective From : Serial No. 5ZXXXXXX

Please revise the original parts list in the Service Manual to conform to the change(s) shown herein.
If new part numbers are shown, be sure to use them when ordering parts

Reason for Change	+ The circled item indicates the reason
1. Improve performance	
2. Change of material or dimension	
3. To meet approved specification	
4. Standardization	
5. Addition	
6. Deletion	
7. Correction	
(8.) Other	

Interchangeability Code	++ The circled item indicates the interchangeability. If no marking, see the Note in the bottom column "	
	Parts / Set Production	
(A)	Original → Early, Original → Late, New → Late	Original or new parts may be used in early or late production set. Use original parts until exhausted, then stock new parts.
B	Original → Early, New → Late	Original parts may be used in early production sets only. New parts may be use in early or late production sets. Use original parts where possible, then stock new parts.
C	New → Early, New → Late	New parts only may be used in early or late production sets. Stock new parts.
D	Original → Early, New → Late	Original parts may be used in early production sets only. New parts may be used in late production sets only. Stock both original and new parts.
E	Other	

Part Number

Parts identified by ▮ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.Parts identified by o mark are new parts used from this Parts Change Notice.

Ref No.	Original Part No.	New Part No.	Notes (+,++)	Part Name & Descriptions	Price
DIGITAL BOARD					
BZ1	YFPKM244AO	YWPKM22EPP41	8, A	Buzzer	

File this Parts Change Notice with your copy of the Service Manual

Panasonic

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